



The Most Rev. Dr. K.P. Yohannan
Metropolitan, Patron

Rev. Dr. Daniel Johnson
Director, Medical Missions

Rev. Fr. Sijomon Pandapallil
Manager

Director - Principal

Dr. George Chandy Matteethra
Director-Principal

Associate Directors

Dr. Mohan Verghese
Senior Consultant
Cardio - Thoracic Surgery

Dr. John Valliattu
Head, Cardio - Thoracic Surgery

Dr. Samuel Chittaranjan B
Head, Orthopedic Surgery

The Editorial Board of The Believers Medical Journal (BeMJ)

BeMJ Editors

Dr. Elizabeth Varkey Cherian
Senior Consultant, Paediatrics &
Quality Accreditation Coordinator

Dr. Thomas V. Chacko
Dean, Medical Education &
Professor, Community Medicine

Deputy Editors

Dr. Anulekha Mary John
Endocrinologist &
Associate Professor, Medicine

Dr. Stephen K. Mathew
Assistant Professor, Microbiology &
Vice Dean, Post Graduate Program

Dr. Alice David
Head, Medical Research
Epidemiological & Statistical Reviewer

Internal Editorial Advisors & Peer Reviewers

Deans

Dr. Sathish Thomas
Dr. Sivasuthan S
Dr. Renu Mathew
Dr. Jacob Koshy
Dr. Thomas V. Chacko

Vice Deans

Dr. Tinu Philip
Dr. Jency Maria Koshy
Dr. Jijo Joseph John
Dr. Stephen K. Mathew

Vice Principal

Dr. Ashu Sara Mathai

Additional Vice Principal

Dr. Geomcy George

Registrar

Dr. Boban Babu

Deputy Registrar

Dr. Alex Varghese

Medical Superintendent

Dr. Girija Mohan

Associate Medical Superintendents

Dr. Grace Cherian
Dr. Philip Thomas
Dr. Rajesh Joseph

Special Executive Officers

Dr. Geomcy George
Dr. Jiju Joseph
Dr. Stephen K. Mathew

Believers Church Medical College Hospital Editorial Board INTERNAL PEER REVIEWERS & MENTORS

Heads of Departments

- Dr. Suma Thomas, Anatomy
- Dr. Anita George, Physiology
- Dr. Subaida M.R, Biochemistry
- Dr. N. Arivazhagan, Pharmacology
- Dr. Ajitha Kumari, Pathology
- Dr. Renu Mathew, Microbiology
- Dr. S. Sivasuthan, Forensic Medicine
- Dr. Sathish Thomas, Ophthalmology
- Dr. Ike Thomas, ENT
- Dr. Marina Rajan, Community Medicine
- Dr. Vijayakumar K, General Medicine
- Dr. Sareena Mathew, General Surgery
- Dr. M. A Kunjamma, Obst & Gynecology
- Dr. Samuel Chittaranjan B, Orthopedics
- Dr. Vijayakumar K.S, Child Health
- Dr. Jiju Joseph, Emergency Medicine
- Dr. Ipeson Korah, Radiology
- Dr. Mohan Mani, Dermatology
- Dr. Jaico Paulose K, Psychiatry
- Dr. Minu Thomas, Neonatology

Heads of Departments

- Dr. Mary Verghese, Anaesthesiology
- Dr. John Valliattu, Cardio-thoracic Surgery
- Dr. George Chandy Matteethra, BRIGHT
- Dr. Thomson Jacob, Urology
- Dr. Khalil Isaac Mathai, Neurosurgery
- Dr. Luke Mathew, Chest Medicine & Tuberculosis
- Dr. Rajesh Joseph, Nephrology
- Dr. Leena Thomas, Cardiology
- Dr. Suresh Kumar, Adult Congenital & Pediatric Cardiology
- Dr. Ram Kumar, Critical Care
- Dr. Geomcy George, Cancer Care
- Dr. Joban John, Neurology
- Dr. Deepak Aravind, Plastic Surgery
- Dr. Chandana Chandran, Pediatric Surgery
- Dr. Bichu Jacob, Facio – Maxillary, Head & Neck Surgery
- Dr. Philip Finny, Endocrinology
- Dr. Binoy G. Russel, Family Medicine
- Dr. T. Koshy Cherian, Reproductive and Fetal Medicine
- Dr. Ajith C. Koshy, Pain & Palliative Care
- Dr. Ipeson Korah, Medical Informatics
- Dr. Roshin Mary Varkey, Physical Medicine & Rehabilitation

Graphic Designer

Mr. Rony K. Thomas

Address:

The Believers Medical Journal Editorial Office,
Believers Church Medical College Hospital,
Kuttapuzha P.O., Thiruvalla, Kerala 689103, India.

Email: editorbemi@bcmch.edu.in

Index

Believers Medical Journal – Volume 1 Issue 1 – 2018.

Contents	Page No
Foreword	
Most. Rt. Rev. Dr. K.P Yohannan , Patron & Metropolitan	5
Message from the Director-Principal	
Prof. Dr. George Chandy Matteethra	6
Message from the Director of Medical Missions	7
Rev. Fr. Dr. Daniel Johnson	
Message from the Manager	9
Rev. Fr. Sijomon Pandapallil	
Perspectives	
PACTS - A Framework for Excellence	10
Mr. Sunny Kuruvilla	
No Compromise on Quality!	11
Mrs. Mini Sarah Thomas	
The Mind	13
Dr. Nirmala Thomas	
Music Based Rehabilitation in Acute Traumatic Brain injury	15
Dr. Girija Mohan	
Parenting Relearnt	17
Dr. Elizabeth Varkey Cherian	
Polio -The Success Story of a Team	19
Dr. Philip Umman	
Polycystic Ovary Syndrome – An Update	21
<i>Dr. Mariam Roy</i>	
Case Report	
Mucocele of the Appendix	25
Dr. Ajitha. K, Dr. Vinoo Jacob, Dr. Philip Umman, Dr. Vinod Joseph, Dr. Deepak Johnson, Dr. Blessy Mary Thomas	
Antibiotic Associated Diarrhea	28
Dr. Deepak K. Johnson	
A Stitch in Time Saves Life	31
Dr. Benson Abraham, Dr. Sajith Sulaiman , Dr. Kannan R. Nair, Dr. Mohan Verghese, Dr. John Valliattu	
Hypocalcemia – A Rare Cause of Heart Failure	34
Dr. Leena Thomas	
Rhabdomyolysis complicating Salmonella typhi and Leptospirosis co-infection	36

Dr. Rajesh Joseph, Dr. Jency Maria Koshy

Thyrototoxic Periodic Paralysis 39

Dr. Jibily Joy, Dr. Anulekha Mary John

The “Invisible” Liver Lesions 41

Dr. Sujith Philp

Continuing Professional Development

Improving the Quality of Patient Care by Engaging in Continuing Professional Development:

A Prologue to The Series 43

Dr. Thomas V. Chacko

Clinical Problem Solving: Spot Diagnosis: 45

Dr. Sumi Lukose, Dr. Jacob Koshy, Dr. Satish Thomas

Pedigree Analysis 47

Dr. Sunil Raj

Picture Quiz : Hematopathology 49

Dr. Sheila Das

Picture Quiz : Cytopathology 50

Dr. Ajitha K, Dr. Dhanya Dinesh

Picture Quiz : Radiology 51

Dr. Vinod Joseph

Disclaimer

The Believers Church Medical Journal is published by the Believers Church Medical College Hospital, with good ethical publishing practices. It is printed to make opportunities available for in-house faculty and staff, to publish research findings and meet the needs of the employee's Continuing Professional Development. It fosters scientific temper, and engages in Continuing Quality Improvement, a hallmark of an institutional system in place, for Quality Accreditation purposes.

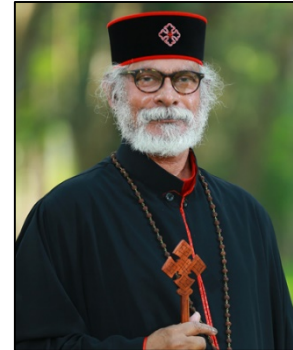
The in-house medical journal is for Internal circulation only. To the fullest agreement by law, Believers Church Medical College Hospital shall not be liable for any loss, injury or damage resulting from the use of articles or any information in it, whether based on contract, tort or otherwise. Readers are advised to verify any information they choose to use or relay from what gets printed here.

Copyright ©2018

All rights are reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted by any means, electronic, mechanical, photocopying, recording or otherwise without prior permission.

Foreword from The Patron

**The Most Rev. Dr. K.P. Yohannan,
Metropolitan and Patron,
Believers Eastern Church,
Thiruvalla, Kerala, India – 689103.**



It's always been our dream to provide healthcare for the sick and marginalized in our society; not just in our state but to those in the far reaches of our great nation. As the healing arm of the Believers Eastern Church, our Medical College Hospital has already made its mark – with affordable, high quality care being made available to all.

It's also been amazing to see how just in three years, the Believers Church Medical College Hospital has become the fountain of knowledge for the future generation and embarked on the Quality Journey towards Medical Excellence.

As the in- house Believers Medical Journal sees the light of day, I hope it paves the way for original work and research to be published, for holistic healing and the betterment of mankind.

My best wishes for the venture to remain a perennial stream, joining the main sea of medical knowledge.



Message from the Director- Principal's Desk

Prof. Dr. George Chandy Matteethra, Director-Principal, Believers Church Medical College Hospital.

Email: director@bcmch.org

**Prof. Dr. George Chandy Matteethra,
Director and Principal,
Believers Church Medical College Hospital.**

**'Translating Vision & Mission into Reality'**

Disease prevention and health promotion are essential attributes of a people oriented welfare state. The health of people is a reflection of the health of the nation. Creating a large group of committed, patient-centered healthcare professionals who will make this happen should be a key ingredient of any effort to provide holistic care.

We, the Believers Church Medical College Hospital, seek to present to our people a new paradigm in healthcare and in medical education. A culture of care and compassion will engulf every interpersonal relationship. We will introduce innovative ideas to train our students - medical, nursing and allied health - to be competent, relevant and filled with the passion to serve in the Spirit of Christ. We will reach out to the poor, the needy and the marginalized. We will work with the mission network to extend our services to needy areas in our country. Our vision is to bring hope and healing to the people of our land and of neighboring countries.

I am excited because, I believe, that as the healing arm of the Believers Church, our team has the passion and the vision to make these dreams come true. We can do all this and much more because 'the love of Christ constrains us.'

May I request you to pray for us, and, if and when possible, join hands with us to make this a 'mission possible'



Message from the Director-Medical Missions' Desk

Fr. Dr. Daniel Johnson, Director- Medical Missions, Believers Church Medical College Hospital.

Email: danieljohnson@bcmch.org

**Rev. Dr. Daniel Johnson,
Director- Medical Missions,
Believers Church Medical College Hospital.**

**'Christ Centered Care'**

It was not easy to see her in the dim light offered by the only candle in my consultation room. Having sat in the same position for the past 8 hours seeing more than 400 patients who had come from the surrounding villages and had crowded around our small temporary clinic, my mind was exhausted, body was aching and eyes were beginning to show signs of fatigue.

But nothing could prepare me for what I saw next.

We had been conducting some free medical camps in the rural villages in the north Indian state of Chhattisgarh and this was the final camp. I had really been looking forward to have some rest. The final camp had started from about 10 in the morning and kept going till she walked in around 6:30 in the evening. She walked in with her 2 year old child besides her and sat down. I gestured to her, kind of asking 'how can I help you?

'Dooth nahi peetha' – she said, indicating that her child wasn't drinking milk. I was a little confused, as it was obvious that her 2 year old was not dependent on milk, although he did look malnourished. As I started to check the little boy standing timidly next to his mother, she said – 'yeh nahi, yeh...' pointing to a bundle in her lap, which had actually escaped my notice. She was letting me know that I was looking at the wrong person! Almost at the same time she 'unwrapped' the bundle on her lap.

What I saw next, has been seared into my mind ever since. Unwrapping her 'bundle' I saw the most pathetic looking little creature I have ever seen. Thin and emaciated beyond what I had ever seen (except in pictures of starving children in Africa) this little one's eyes were sunken; skin was loose like a 90 year old and breathing, heavily labored. I jumped up from my seat, as if a million volts had hit me and rushed out of my room calling for our local priest who had organized the camps. I asked him to immediately arrange for them to be taken to the Hospital, knowing fully well that this baby probably would not survive the next 12 hours. I don't know what the reason was, but the baby who was only 6 weeks old, had not been drinking the mother's milk at all.

They went out from the room to be taken to the Hospital but not out of my mind as I continued to see more patients. About half an hour later, my eyes now having adjusted to the dim light, I saw them standing around near the entrance of the clinic! I just couldn't believe that they were still there! I rushed out again and said to our priest, let's not wait for

any vehicle but give some money and hire a taxi to take to the nearest hospital. They seem to want to do it and went out towards the road, and I reluctantly returned to see maybe my final 2 or 3 patients for the day. At around 8:30 pm, I had seen everyone. I walked out of my small room, with the candle in hand - only to see the mother and the child again! They had not gone anywhere. Stunned and dumbfounded, I looked searchingly at our priest's face for some explanation. He took me aside and told me these words '– doctor, they won't go anywhere; it is a she.'

Not fully grasping the meaning of the statement, I started to argue that surely the child would die without expert medical care, when the priest told me the same thing again, only clearer this time – 'it's a girl and they are content to let it die.'

I had come across two powerful forces, lack of basic health education and an abundance of myths and traditions – both combining with devastating effect to seal the fate of this little girl child.

India is a vast land with all sorts of geographical terrains within its boundaries, making it difficult to ensure that health care is available to all. India is also diverse and rich in traditions – which though usually is harmless also can be detrimental. For ex: There was a study which stated that if a new born were to be given mother's milk within half hour of birth, we could have saved 250,000 children in India alone! Why don't mothers give it then? It is because of the belief that colostrum, which comes out from the mother, in the first few days, is not real milk, as its color is slightly yellowish and not white as milk! How do you tackle such issues?

For one – we need to educate the masses with the right information. Secondly, we need to be there, at the grass root level in order to do that. That is exactly what Christ said – you go 'out' into the world.

As BCMCH, we are an institution with the aim to bring hope and healing through the love of Christ to the masses. But in order to do that, we also need to be a center of scholarship. That way we can train a whole new generation of compassionate and highly skilled healthcare workers who will go out and take this training they have received and essentially bring light into people's lives. But these health care workers 'go out into the world' simply because they are motivated by their master – Jesus, who also left his heavenly abode and came to earth to give us, sinful humans a lease of life.



Message from the Manager's Desk

Rev. Fr. Sijomon Pandapallil, Manager, Believers Church Medical College Hospital.

Email: frsijo@bcmch.org

Rev. Fr. Sijomon Pandapallil

Manager

Believers Church Medical College Hospital

Thiruvalla, Kerala, India- 689103

Phone: 0469 3023100



Message

Ever since the Believers Church Medical College Hospital opened its doors, it has integrated its Vision and Mission, amidst daunting challenges, bringing affordable healthcare and responsible charity to the people of the state. Today, it merges technology with medical excellence, as a teaching institution with its various healthcare super specialities.

The premiere edition of the in-house medical journal is being released to foster scientific research, commence audits in healthcare and shape the future generation by “walking the talk”.

As we cross milestone after milestone in this exciting journey, my prayer is that we become a centre of holistic healing and as well as a home of professional and academic excellence.

I wish our journal and the teams all the best.

Perspective

PACTS - A Framework for Excellence

Mr. Sunny Kuruvilla, Former Chief Operating Officer, Believers Church Medical College Hospital.

Email: sunnykuruvilla@bchealthcare.org

How do we rate the services of a hotel, a taxi, a bank, a gas agency or any other service provider? It might be in terms of the quality of their service or the value of what we paid for. Our repeated visits to a service provider even when there are other choices could be an indicator of their service quality. As providers of health care, hospitals do not differ in this matter.

Continuity of patients is important for the sustainability of a hospital. In their efforts to attract new patients to hospitals, they tend to improvise on technology, infrastructure and services. In this process we are likely to ignore the existing patients. Retaining existing patients has a greater potential and is less expensive in comparison with attracting new patients.

It has been observed that most of the patient's complaints highlight the failure in Professionalism, Accuracy, Courtesy, Timeliness and Safety (PACTS). Who controls these parameters? Directly or indirectly these are controlled by the health care staff!

The 'PACTS frame work' is a model intended to design and introduce systems in health care institutions to enable effectiveness in patient care services.

Professionalism: In this context, professionalism is 'adhering to the best accepted practice of the industry in every function of a service area'. Professionalism brings a 'system approach' rather than an ad hoc way of functioning. It demands SOPs (standard operating practices) at functional levels. Continuous improvements through feedback and professional updating are also evident in professionalism. Confidentiality is closely associated with it.

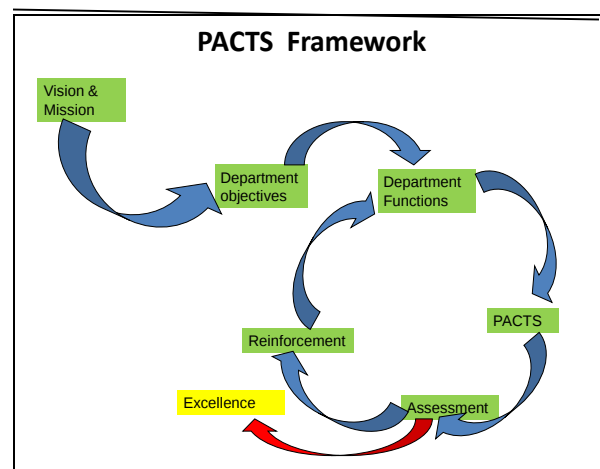
Accuracy: Accuracy is error free functioning. Right judgements and right documentation result in accuracy. Accuracy is indicated by right diagnosis, appropriate tests, correct values and calculations.

Courtesy: Courtesy is the experience of a patient in the hospital in terms of politeness, respect, dignity and empathy.

Timeliness: Timeliness is the ability of the organization to value patient's time and to provide services

accordingly. This is the responsibility of every employee in the health care organization.

Safety: Emphasis is placed on the system of care delivery that (1) prevents errors; (2) learns from the errors that do occur; and (3) built on a culture of safety that involves health care professionals, organizations, and patients.



PACTS Frame work Process

1. First of all the organization should have a strong passion to improve the quality of its services. This should be reflected in their vision and mission statements.
2. In line with this, all departments should have objectives which can be achieved through their functions at the departmental level.
3. This is where 'PACTS' comes in. Each function of the department should be tied with professionalism, accuracy, courtesy and timeliness as applicable. Few functions of the HR department are given as an example in Figure-1
4. Once the department functions are developed based on 'PACTS', the effectiveness should be assessed periodically through appropriate measures such as:-
 - Patient satisfaction survey/feedback
 - Performance appraisal

- Exit interview with staff
 - Staff satisfaction survey
 - Suppliers feedback
 - Time studies
 - Medical and other types of audits
 - Quality checks - internal and external
5. Based on the assessment if 'PACTS' score is found low, the following reinforcement measures can be adopted
- Training
 - Motivation
 - Close monitoring
 - Developing accountability
6. This cycle should be an ongoing process, as it focuses on the refining of staff and the systems leading towards the satisfaction of customers and eventually to excellence.
- Ultimately, the patient determines the level of excellence of the hospital services. That's probably why Gandhiji said "A customer is the most important visitor on our premises. He is not dependent on us. We are dependent on him. He is not an interruption in our work. He is the purpose of it. He is not an outsider in our business. He is part of it. We are not doing him a favor by serving him. He is doing us a favor by giving us an opportunity to do so."



Perspective

No Compromise on Quality!

Ms. Mini Sarah Thomas, Chief Nursing Officer, Believers Church Medical College Hospital.

Email: minisarah@bchealthcare.org

Hospitals have a range of activities focused on ensuring and improving safety, efficiency, effectiveness, timeliness, access and satisfaction. A quality management system ensures comprehensive and integrated effort leading to desired results. Such a system is highly dependent on data, reporting, documentation, and continual learning. Quality management in the health care field ensures that patients receive an excellent provision of care. Delivering the right care at the right time in the right setting is the core mission of hospitals. The hospitals must have a striking degree of motivation and commitment to ensure high-quality care and fulfil the QI mission. The staff should not just go through the motions or conduct QI activities because of any external pressure to do so.

Key words: Quality, Process, Continuous quality improvement)

This commitment is reflected in and nurtured by:

- Active leadership and personal involvement on the part of the top management
- An explicit quality-related mission and aggressive quality-related targets
- Standing and ad-hoc quality committees

- Regular reporting of performance indicators with accountability for improved results
- The promotion of a safe environment for reporting errors

The key elements producing high-quality hospital care and successful Quality Improvement are:

- Developing the right culture for quality to flourish
- Attracting and retaining the right people to promote quality
- Devising and updating the right in-house processes for quality improvement
- Giving staff the right tools to do the job

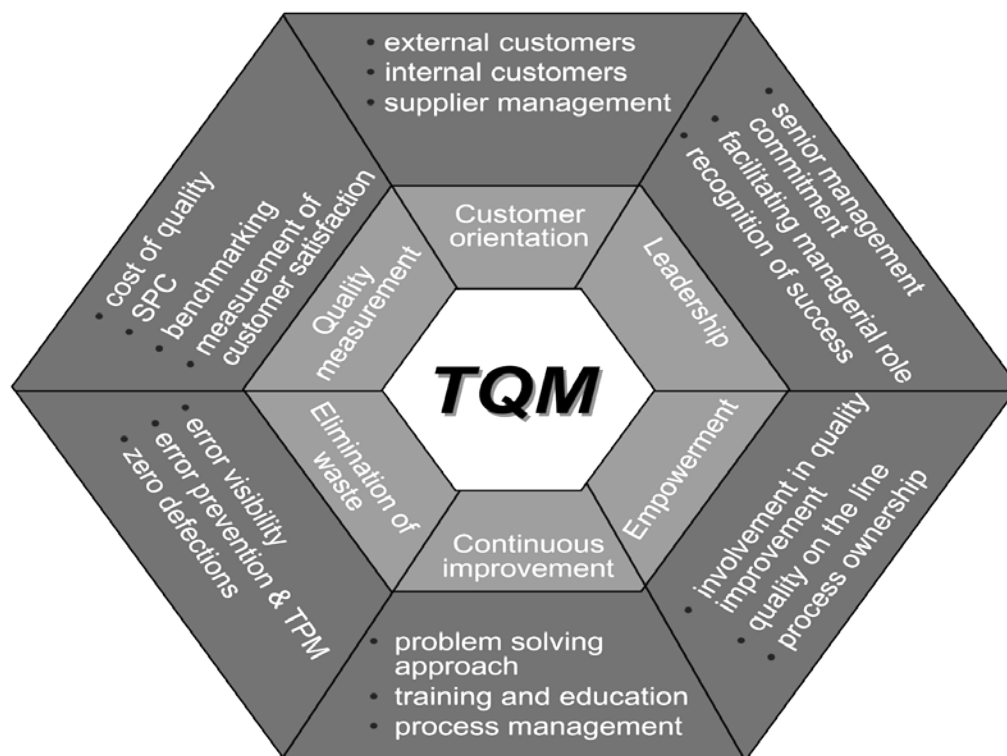
How to hold the gain?

Measurement is the central concept of quality improvement; it provides a means to define what hospitals actually do, and to compare that with the original targets in order to identify opportunities for improvement. The performance of hospitals are graded on the basis of indicators like waste management, cleanliness, referral system, presence of vital drugs, morbidity and mortality as some of the core quality indicators. These when introduced and monitored will show a marked improvement in the functioning and performance of hospitals.

The best hospitals not only collect data on outcomes and cost but also pull apart the numbers on surgeries, tests, and other procedures to identify each step in the process where there is less-than-optimal practice. QI departments must be adequately staffed and trained to facilitate the problem-solving process. Deficiencies in outcomes must not be hidden or ignored but instead used to inspire a process of discovery followed by corrective actions and accountability. Effective problem solving leads to the development of evidence-based protocols and critical pathways and enhance efficiencies such as reduced turn-around time for test results and reduced errors related to standardization of supplies and procedures.

The staff and management at Believers Church Medical College believes in empowering each member of staff across the hospital and equipping them with constant training and continuous quality improvement programs

in achieving and maintaining optimum quality of care and customer and staff satisfaction.



Source: Silvestro, 1998



Perspective

The Mind

Dr. Nirmala Thomas, Senior Consultant Pediatrician, Thiruvalla Medical Mission Hospital.

Email: nallanickan@gmail.com.

Aims: To offer a simple strategy for the awareness and sustenance of a healthy mind in any given community.

To find other like-minded people who perceive a felt need for a simple guideline to help maintain a healthy mind among 'normal folks' which may be difficult to come by.

The mind, an integral entity of the body and spirit configuration of human-kind, needs efforts to sustain its wellbeing just like the body and spirit. It is a powerful instrument, a superb tool to be used and put away once used.

Rightly used, our mind has magnificent capacities to help our walk on this planet, and hold us apart from 'mindless beings'. Wrongly used, the same mind can become a dreadful affliction resulting in compulsive tendencies in thoughts and behavior.

Dr. Carolyn Leaf, a South African molecular biologist and neurophysicist suggests a twenty one day schedule any individual can try, taking just fifteen minutes a day to nurture one's own mind.

Five steps are suggested to begin as a daily discipline, which can eventually become a great self-empowering habit.

1. Reflection: One needs to find a fifteen minute time when one can listen to one's own thoughts, in peace and quietness. During such efforts what most folks will hear are complaints, comparisons, speculations, validations, likes and dislikes. This comes from our minds conditioned by environment and inheritance. DO NOT ARGUE OR JUDGE your mind at this point. Good and bad thoughts are built into the brain the same way, but using different chemical pathways. Remember we are built for depth, not superficiality.

Wisdom takes time - it is not random, and it is very organized.

2. Documentation: Write down your reflections, as this will help, to bring order, out of a multitude of chaotic information that hit the brain. When written, a visual representation on the thoughts of the mind is obtained.

3. Revisit: Observe and study these thoughts regularly for a couple of days. What comes up most in these thoughts? Is there a pattern in these documentations?

4. Prioritize: Question yourself. Do I change the negative perspective of mine? Do I forgive? Should I discuss or is there a need to get help? Should I celebrate the many positives I see!

5. Act: With a daily uninterrupted fifteen minutes over twenty one days you will begin to take control of your thought life. However, there could be, in most folks, many factors which will hinder finding this fifteen minute space within the mind. We need to be aware of these, in order to overcome.

There are many factors that may hinder such an exercise of our thought life.

1. Ego: is a fact of human existence, and we all have it. The problem is that it contributes nothing towards maturity. It mostly projects our wants (money, comforts, status, ability, appearances). It wants the last word in the most trivial of arguments. What is the last thing that we can argue about anyway? It only focuses on past hurts and future uncertainties.

This robs us of the relevance of the present moment which alone is ours.

2. Time: The understanding of time is cardinal to sparing time for the mind. Time is of two kinds. There is 'clock time', and 'psychological time.' The first helps us to plan activities, and implement time management. The second is when we 'dwell' on past remorse and hurts, or on future hopes and aspirations. This can become an addiction, and blank out the present. THE NOW, the only space within which your whole life unfolds. The only time in which you can ACT. There was never a time in your life that was not NOW.

3. Emotions: Our emotions are a huge obstacle to finding mind-space. While any emotion can color our thoughts, it is an easier effort to overcome anxiety, fretfulness, envy etc. Anger can be misleading. If one considers it a managerial or a motivational tool, one is mistaken -it is a manipulative tool.

Of all emotions, psychologists believe that 'pain' is a primordial and universal one in the human mind. It is almost akin to a sense of abandonment, and often ignored, and not faced. One needs to face one's pain to create positive mind space.

A good look at it often offers solutions. It is another matter if one feels so wronged that one does not feel inclined to do what seems to be the solution. That is alright, accept that a situation may or may not change, but there is less inner conflict. It is futile to keep resisting something that already 'is'. By confronting it, one gets 'familiar' with that pain, it is less of a threat, and it is a step towards healing. With time one's attitude can become positive. If by chance there is nothing to change the here and now, then accept, by dropping all inner resistance. This is called 'surrender'. It is not weakness; on the contrary, it has great strength. When ready to, do not hesitate to seek good counsel.

4. Self-pity and Non Forgiveness: Even in the best of minds, overcoming these is a life long struggle. But, the fact is that forgiving is to let go of grief by relinquishing grievance. Forgiving is to offer no resistance to one's mind reaching out higher, and for life to go on through you.

5. Intelligence: Reason, logic and analysis are all only a tiny aspect of the intellect. Things that truly matter like joy, love, creativity and peace arise from beyond the mind. More importantly, as one humbles oneself in the search of a meaning to life, 'revelations' are the sources of the greatest knowledge.

6. The Law of Impermanence: Do not seek permanence where it cannot be found, and then suffer when conditions, people and places do not make you happy. One might be surprised at this, but the truth is that anything that has a 'name or form' comes under the law of impermanence. Give it a thought!

7. Partners: They can make or break us, both at home and work. For our part we will do well to get help to understand our own flaws, and our woefully, pitifully narrow view-points. To conclude, one has to be Free of addictive thoughts that rob us of our time.

Free of the burden of personality, Free of 'pain' in order to hold our thoughts captive, study them, and go on a journey to find wisdom, knowledge and strength - all from within us.

So far, we considered a search within our mind - a journey into ourselves. Even as we take a journey on this planet, travelling, studying, working to improve our life situations, never forget that life itself is a gift, as all things are.

Life is given to us whole, complete, and perfect. (What do we have that has not been freely given to us?) Each of us has an inner and an outer purpose. Discovering our 'destiny', or, inner purpose is what gives the outer journey a meaning. **Then**, you will see for e.g. that success and failure as the world sees it no longer matters. The external journey is only a game you play, something you enjoy doing regardless of recognition or remuneration.

The strength and motivation to be so liberated and yet fulfilled comes from within us. To discover that our physical body which some consider inconsequential is actually the embodiment of - great physical strength. We need wisdom and concentration, energy and invincibility, to 'inhabit' this visible, tangible shell. Our conscious inhabiting, exploring and understanding this physical structure, (The temple of GOD); is needed for us to realize that this physical structure holds the 'Spirit of God' in us. It is through this spirit that "the bottomless things of God, "beyond man's scrutiny" is revealed by the ONE who knows each of His creatures peculiar needs so absolutely. This act of mystery is explained to the Christian through psalm 139, Ephesians ch.1 Colossians ch.1 etc.

As time goes on you will smile at that voice you daily hear in your mind.

Pain will be objective, familiar and mature.

You will be free of the burden of personality.

You will glimpse as you daily journey into yourself a 'core' that is not of this world.

Finally, Why are so many of us never at peace with ourselves? Both religious and secular psychologists offer one answer. "laziness". The best of us are lazy, too lazy to discover ourselves!

*Huge acknowledgements to Scott M. Peck [The road less traveled],
Ekhart Tolle [The power of NOW].*



Perspective

Music is Medicine for Brain-Sensory Stimulation for Recovery after Coma in Traumatic Brain Injury

Prof. Dr. Girija Mohan, Department of Child Health & Medical Superintendent

Believers Church Medical College Hospital Email: drgirijamohan@gmail.com

Abstract

The role of music in cognitive rehabilitation is evolving based on newer findings emerging from the fields of neuro-musicology and music cognition. Research findings from these fields have contributed significantly to our understanding of music perception and cognition and its neural underpinnings. Music based intervention methods have shown promising results in rehabilitation.

Key words

Sensory Stimulation, Music Therapy, Traumatic Brain Injury

Introduction

From a neuroscientific perspective, indulging in music is considered as one of the best cognitive exercises¹. Many innovative methods to treat traumatic brain injury sequelae have been developed over the years^{2,6}. Music therapy is one such method. Studies suggest that the use of musical intervention facilitates early responsiveness in patients which in turn foster cognitive rehabilitation in early acute phase following traumatic brain injury^{2,4}.

Case Vignette: A six-year-old previously healthy girl, was brought in a critical condition with convulsions, following partial strangulation with a shawl, which was tied around her neck while at play. MRI of brain and cervical cord revealed cerebral ischemic changes. EEG done showed diffuse slowing. A diagnosis of brain edema, high cervical cord compression secondary to accidental partial strangulation was made. Intubated and ventilated with supportive care but she continued to be comatose. By the 14th day, she remained static with only response to pain and intermittent eye-opening with stable vitals.

As part of rehabilitation, a multi-modal sensory stimulation therapy was then planned. The girl had a keen interest in music and even had a favorite song. Due

to poor clinical response, music therapy was considered along with routine physical rehabilitation. Her favorite song was played continuously through headphones, day and night. In addition, to facilitate auditory stimulation, the relatives were advised to call her by name close to her ears several times during the day. Surprisingly, she started responding to these calls. The auditory stimulation with her favorite song with name calls continued, as her medical management discontinued. With the ongoing day to day music stimulation, she began to respond to calls and commenced to identify parents and later her relatives. Two months after admission, she sat up and within weeks further remarkable improvement was noted. She started to stand and began walking holding on mother's hands for support. Within days, she even started to talk and sing her most favorite song, which she had been listening to for more than two months. Thus her favorite song provided a major contribution to her revival from the coma to ambulation. MRI brain repeated after 3 months reported a normal study. She attended school after six months and is now doing well in her studies on follow up after a year.

Discussion

This patient highlights the significant role of sensory stimulation with music therapy in a pediatric patient with traumatic brain injury. Current brain imaging techniques have shown the brain's plasticity – its ability to change and music therapy has been identified to activate the neuronal networks in the brain.

Armed with this growing knowledge, music can be employed to retrain the brain after traumatic brain injury^{2,6}. Studies have revealed that because music and motor control share circuits, music can also improve motor movements.

Music therapy has been shown to help patients with language and cognitive difficulties besides traumatic brain injury². Hence, it has been increasingly suggested

that these type of sensory stimuli are to be used as part of the rehabilitative care provided along with the main therapy.

Music is a highly structured, auditory language with complex perception, cognition, and motor control in the brain. Hence, music can be employed to re-educate and retrain the injured brain⁴.

After years of research two findings stand out as important for using music in rehabilitation.

First the areas that are activated by music are not unique to music alone, as these networks process other functions.

Second learning music makes changes in the brain. Areas of the brain that are involved with music are also involved in processing language, auditory perception, attention, executive control, and motor control.

Music can drive plasticity in the human brain, shaping it through training and learning.

The advantages of music over other type of therapies for motor control are because of its rhythmic patterns that drive priming and timing of the motor system and the rich connectivity between neurons in the auditory system with that of the motor system^{2,7}.

Auditory neurons respond to rhythmic stimulation and the firing patterns that spread via the connecting nerve fibers into motor neurons, activating them in a synchronous manner. Music also can activate the attention network on both sides of the brain, which can help overcome attention problems caused by stroke or traumatic brain injury⁶.

Studies show that the therapeutic music exercise help to improve verbal output for those patients with aphasia, stimulates language development in children by strengthening the respiratory and vocal systems, and improving articulation and fluency.

Music therapy can retrain the auditory perception, attention, auditory memory and the executive functions by involving reasoning, problem solving and decision making^{2,6}

It is hypothesized that listening to music facilitates neurogenesis or regeneration and repair of cerebral nerves by adjusting the secretion of steroid hormones, finally leading to neural plasticity.

Biomedical research in music has come a long way to open new and effective doors for music to help re-

educate the injured brain^{2,3}. Professionals need specialized training in music therapy and other possibilities for rehabilitation require further research and clinical development⁵. Scientists need to better understand what dosages work best, to pay more attention to research that will benefit children, and to focus on disorders in which neurologic music therapy lacks rigorous study so far, such as autism, spinal cord injury, cerebral palsy and multiple sclerosis. In addition, the effects of brain injury can be complex, and researchers must take individual factors into account and adapt to individual needs^{1,4,6}. Neurologic music therapy now meets the standards of evidence-based medicine, is recognized by the World Federation of Neuro rehabilitation, and should be a tool for standard rehabilitation care in patients with brain injury.

References:

1. Rollnik JD, Altenmülle, 3rE .Music in disorders of consciousness Front Neurosci. 2014 Jul 3; 8: 190.
- 2.Bower J, Catroppa C, Grocke D, Shoemark H. Music therapy for early cognitive rehabilitation post-childhood TBI: an intrinsic mixed methods case study. Dev Neurorehabil (2013). 10.3109/17518423.2013.778910
3. Joke Bradt , Wendy L Magee , Cheryl Dileo , Barbara L Wheeler , Emer McGilloway. Music therapy for acquired brain injury; Cochrane Database of Systematic Reviews 2010, Issue 7. Art. No.: CD006787. DOI: 10.1002/14651858. CD006787. pub2.
4. Kemper, K. J., & Danhauer, S. C. (2005). Music as therapy. Southern Medical Journal, 98(3), 282–288.
5. Fukui H, Toyoshima K. Music facilitate the neurogenesis, regeneration and repair of neuron. Med Hypotheses (2008) 71:765–910.
6. Thaut MH. Neurologic music therapy in cognitive rehabilitation. Music Percept (2010) 27:281–510.1525
7. Nayak, S., Wheeler, B. L., Shiflett, S. C., & Agostinelli, S. (2000). Effect of music therapy on mood and social interaction among individuals with acute traumatic brain injury and stroke. Rehabilitation Psychology, 45(3), 274–283.



Perspective

Parenting Relearn

Dr. Elizabeth Varkey Cherian, Department of Child Health, Believers Church Medical College Hospital

Email: drelizabethbcmch@gmail.com

Parenting is proactive to a child's survival and growth. What a child feels and learns from parenting behavior, leave imprints in their mind that last a lifetime. Eric Berne, the originator of the theory of transactional analysis describes every individual to be composed of three psychological states – the parent, the child and the adult.

The child state is the first state of pleasurable sensations versus unpleasant experiences, devoid of expression with vocabulary. By the third year, pleasant experiences are associated with movements and discovery, and he learns to repress inappropriate urges and desires. He understands cause and effect relationships around him. When a parent helps a child to experiment, nurture his curiosity, take mild risks, the child gets filled with glorious and pristine feelings of first discoveries. On the other hand, if the parental environment denies him this fundamental urge to explore and learn, the child is forced to give up basic satisfaction and is left with a sense of frustration, which then lingers as negative feelings, guilt, fear and lack of confidence throughout his life.

The parent state begins as a huge collection of recordings of dos and don'ts which is imprinted in the child's mind in an unquestioned manner in the first five years. Parents, older siblings, caregivers and teachers contribute to this ever increasing parent data. The size of this parent is in proportion to the inputs that he acquires and gets permanently registered within, as the code of law and internal ethics within him throughout life. Thus positive and negative stimuli in childhood have similar lifelong impact.

The adult: Parallel to the time when the child and parent states get defined, a third dimension the adult state also develops by the end of the first year which consistently records the results of his own experience and checks if it synchronizes with the directing parent within and about him. When the adult within sees it is in synchronization with the external parent, he is seen to be accepting rules of conduct. Disagreement is perceived as disobedience or rebellion externally. Encounters between any two individuals is thus an

interaction between the dominant personalities in each person.

The process of acquiring social and emotional growth varies with the sibling order, the nurture, and control within the family. A child leaves home for his first social experience in school, carrying these three facets of his personalities within. Parenting echoes in his mind are transmitted into his social interactions, sometimes in extreme forms as bullying or as passivity. The child state if overpowered or not gratified leads to internalization, lack of expression, and fear even when no organic pathology is detected. If parental data is meaningful, the adult synchronizes with the parent state leading the child state into one of confidence, positivity and externalization. Thus the final adult behavior is a balance between control and nurture of the parent over the child.

Parenting can be of four types. **An authoritarian parent** is one who does not allow his child to make independent decisions. He provides absolute control, expects implicit obedience, and provides suboptimum nurture. These parents mostly have grown up with physical punishments or have felt unaccepted unless they complied with rules and orders. The child of an authoritarian parent feels stifled, becomes passive, internalizes feelings, develops poor communication skills, and lacks interest and curiosity. On the other hand rebellion when internalized, follows negative paths with fear, guilt, poor creativity or even violence.

The **indulgent parent** provides abundance of nurture with minimal limit setting, filling their child's life with their own unfulfilled wants and dreams of money, comforts, ability and appearances. In this age of affluence and nuclear families, overshooting wants over needs is common. Too much of anything is bad and this is true of nurture as well. When everything comes their way during childhood, the child develops an entitlement mentality, putting himself first always, failing to accept disappointments and challenges, when life does not evolve the way he is used to in his childhood. He fails to tolerate and cooperate, becomes

aggressive, paving way to non-teaming at work and splintered family relationships.

A **neglectful parent** is one who has no time for his child, to provide control or nurture. When adequate parenting is not available at the right time of life, children grow up with little self-control and poor social skills. In this age of dual working parents and stress at work, the child at home experiences a life without limit setting and parental nurture, interacting through electronic gadgets, and in the care of nannies whose values do not match with that of the family. He does not learn to love, tolerate, cooperate, but becomes aggressive when confronted. A neglected child with poor bonding, grows insensitive to the needs of others, finally neglects his own parent in their old age.

An **authoritative parent**, grown with authoritative parents himself, is one who provides both control and nurture with a balance. With optimum nurture and optimum limits, there is no excess sanction for inappropriate behavior. Within the set ranges of limitation, the child is allowed decision making himself. The child gets allowed to experience the outcomes of both good and bad decisions that he makes. With praise and rewards for reinforcement, he learns decision making, with focus on positive values.

A six-point parenting program.

1. Practice what is preached: When parental action does not match with advice, their preschool child does not imbibe taught values and disciplines. A child cannot be expected to tidy up his things, if that job is the responsibility of one parent or a housemaid. A child should be taught to appreciate effort. A child from a cluttered home, clutters his workplace and public places. Negative practices of biological parents, family culture and social norms in school and society, are easily accepted, perceived right and applied in practice by the emancipated adult that has grown up within the child.

2. Provide positive instructions: A child's mental maturity is crucial to his comprehension. While he masters manipulative and locomotive skills and is told 'no' to every attempt of experimentation, he gets stifled of his curiosity, understanding and creativity. Allow the child to assess, perform and perceive outcomes of his own right and wrong decisions. Allow them to experience some difficulties, learn to solve problems, rather than expect implicit obedience or be given

absolute comfort. Teach a child to rise after a fall rather than blame him. Encourage children to feel, tolerate pain, and accept disappointments proportionate to their age. A child who is trained for zero tolerance is unprepared for team work in work and marriage when grown up.

3. Resist perfectionism: A parent who tries to cultivate perfection in his child is often disappointed, especially with grades at school. Being better or the best are only shades apart. Parents who pressurize their children over grades early while in school, make them lose the zeal to peak at the right time in college. There is more to education, than reading, writing and arithmetic. Respect the learning process that takes place within the child, which is more important than the final grades of lower classes. Look around, toppers in lower classes are not necessarily toppers in college years, profession, family life or social life.

4. Avoid comparisons: Judgmental comments and unflattering comparisons between peers or siblings' work undermine confidence in a school child. Discouraging phrases of negativity and shaming leave indelible impressions in the young mind. Allow a child to learn from his experience of failure. Reasonable risk taking offer support to fuel his understanding and creativity.

5. Encourage creativity: Providing too many manufactured play props robs a child of his thinking ability. Instead encourage him to explore, brainstorm him for ideas, make positive motivating comments, and ask specific questions. Allow the child to experience the outcome of his own decisions. If every wish of a child is fulfilled, he runs out of interest and soon does not care.

6. Respect the child whom you parent: Childhood and parenthood come once. Children are precious gifts we get to nurture and keep in safe custody during their formative years. Allow them to grow through the preschool years with a sense of discovery more than achievement. Spend more time not money on your child. Teach them to work with others to get things done. Foster the adult in your child to navigate his childhood with values by your parenting. A family held together by love, tolerance, cooperation, without aggression depicts the right balance of values, rights and responsibilities of parenthood.



Perspective

Links in the 'Cold' Chain – The Polio Success Story

Dr. Philip Umman, Department of General Surgery, Believers Church Medical College Hospital.

Email: philip.umman@gmail.com.

Finally victory. We have become a polio-free country. In 2011, there were no polio cases reported from India, and hence in 2012, we were removed from the list of polio endemic countries. In 2014 after three polio-free years, we were declared as a polio-free country by WHO. This is no mean achievement. My mind goes to about two decades back when the Pulse Polio program was launched, initially as a pilot project in few districts and then extended to cover the entire country. As third year MBBS students, we were recruited by the Community Medicine department of our college as volunteers for the program. We too as students manned the booths set up in slums, railways stations, schools and any and everywhere for the designated two days.

Few years down the line, I was a medical officer in a rural area in Central India and now in charge of the program in the twenty-two villages under my primary health center. Supervising the staff, taking care of logistics, maintaining the cold chain and even looking at misses and in rare situations carrying out mop-up or ring immunizations in villages from where suspected cases were reported. At the bottom end of a massive national program but probably the most vital, each one of these doctors, health workers and volunteers played an important role in the success of the program. The workhorses of many government programs – the government schoolteachers – too played a vital role. With no prior medical knowledge, but with training, they were more than equal to the task, maintaining all technical requirements at the booth level in many rural areas. Not only that, they played an important role in mobilizing children from their classes (and also the younger siblings of their students) to get immunized.

Analyses of the recent victory of the Aam Aadmi Party in the elections in Delhi in 2014, focused on their successful mobilization of online and mobile telephony resources. Gen Y may be proud of the successful result of their technological skills, but technology is not

everything. In an India not as aware or connected as now and certainly in the pre-Facebook and twitter age, the message was got across to millions all over. Not just once, but over and over again.

A few aspects of the program are worth noting. During the initial days of the program in the early nineties, public address systems in railway stations were used to propagate the message. If you lifted the phone, there were messages from MTNL and BSNL. Telephone and electricity bills came with the pulse polio dates. Bollywood celebrities were speaking on television for the same.

Public Private Partnership raises the hackles of many, especially in Kerala. However, the Pulse Polio program was and is an excellent example of public-private partnership to achieve set goals. In many cities, the clinics of family practitioners were used on the designated days as booths for vaccination. Premises of worship were willingly let out. Private hospitals allowed booths in their premises. Voluntary organizations like the Rotary Club (International and India) were partners in the program and played seminal roles in the conception and execution of the program. Countless social organizations at booth levels also contributed their mite.

Another notable feature was the almost hundred percent enumeration of all the children below the age of five. Door to door surveys were carried out prior to the program. Even as a third year student, what surprised me was that each booth manned by us students had a list of kids from the immediate surroundings who were supposed to be vaccinated in that booth. If by afternoon, any of the kids assigned to that booth had not reported, the child had to be visited at his/her house and given the polio drops.

Booths, especially in cities, were easily accessible and to capture those not enumerated or traveling, booths were

also set up in railway stations and bus stands. Coupled with this was the strict and quick reporting of suspect cases to district level officers so that the area from where the suspect was hailing could undergo further coverage.

The polio vaccine requires a strict cold chain to be maintained for vaccine potency. That such a program with such strict technical requirements could be extended to cover every nook and corner of our vast country shows that nothing is impossible if there is a will. The initial years were a resounding success with a sharp fall in polio cases but soon a few pockets in India were reporting cases. There was also some controversy as to whether the Pulse Polio program was leading to a shift of focus away from the Universal Immunization Program leading to dropouts from the routine vaccination schedule. But it is to the credit of all involved, from those at the top planning and coordinating to those at the bottom actually

implementing the program, that they toiled on. H W Longfellow wrote,

“The heights by great men reached and kept were not attained by sudden flight, but they, while their companions slept, were toiling upward in the night.”

Success even if delayed has finally come. Nobody born in the last three decades has an idea of smallpox, another such success story of international cooperation. Succeeding generations will also wonder what polio was. A well thought out and planned program with clear-cut achievable objectives and sensitization of all stakeholders including parents, making maximum use of available resources, contributed to the success of this program. And each of us, however minor a link in that chain, can lay a claim to that success. After all, a chain is only as strong as its weakest link.



Review Article

Polycystic Ovary Syndrome – An Update

Dr. Mariam Roy, Department of Obstetrics and Gynecologist, Believers Church Medical College Hospital.

Email: mathewmroy@gmail.com

“Polycystic ovary syndrome” is an extraordinarily common disorder, affecting 6% to 20% of reproductive age women depending on the diagnostic criteria used and is characterized by hyperandrogenism, chronic anovulation and infertility. We today know that the “polycystic ovary syndrome” (also known as polycystic ovarian syndrome) or PCOS was previously known as the “polycystic ovary disease” (PCOD), and even before that as the “Stein-Leventhal syndrome”¹. This is of clinical significance because the diagnosis of PCOS presents a challenge in adolescence and early diagnosis may facilitate interventions to improve long-term health².

Growing evidence also points to an association of PCOS with insulin resistance and compensatory hyperinsulinemia as well as possible dysregulation of the insulin-like growth factor-1 (IGF-1) system. Long-term sequelae of insulin resistance in PCOS include metabolic disturbances, higher risk for non-insulin dependent diabetes mellitus (NIDDM), hypertension, cardiovascular disease and endometrial carcinoma^{3,4}. A reproductive medicine specialist treating infertility or an endocrinologist who gives the first diagnosis of PCOS should explain long-term management plan.

One of the interesting molecules that have been studied for the treatment of PCOS is Myoinositol, which is widely found in nature. Among the existing nine different stereoisomer forms, the most common one found in nature is myoinositol. Studies suggest that myoinositol an effective alternative in the treatment of PCOS.

Women with PCOS have difficulty becoming pregnant and may have high levels of androgen hormones from the ovary and adrenal gland. In addition to fertility impairment, a woman with PCOS may have some of the following symptoms and findings:

- Irregular or no menstrual periods in women of reproductive age (ovulatory dysfunction)
- Acne
- Weight gain
- Excess hair growth on the face and body (hirsutism)
- Thinning scalp hair
- Ovarian cysts (polycystic ovarian morphology)
- Mental health problems.

PCOS was a poorly understood common endocrine disorder occurring in women. The conference for PCOS held by National Institutes of Health (NIH) in 1990 created a working definition of the disorder and diagnostic criteria.

Consensus workshop in Rotterdam, Netherlands in 2003 developed new diagnostic criteria known as the Rotterdam Criteria. In 2006, The Androgen Excess (AE) and PCOS Society proposed the AE-PCOS Criteria⁶.

PCOS: Changing Women's Health Paradigm

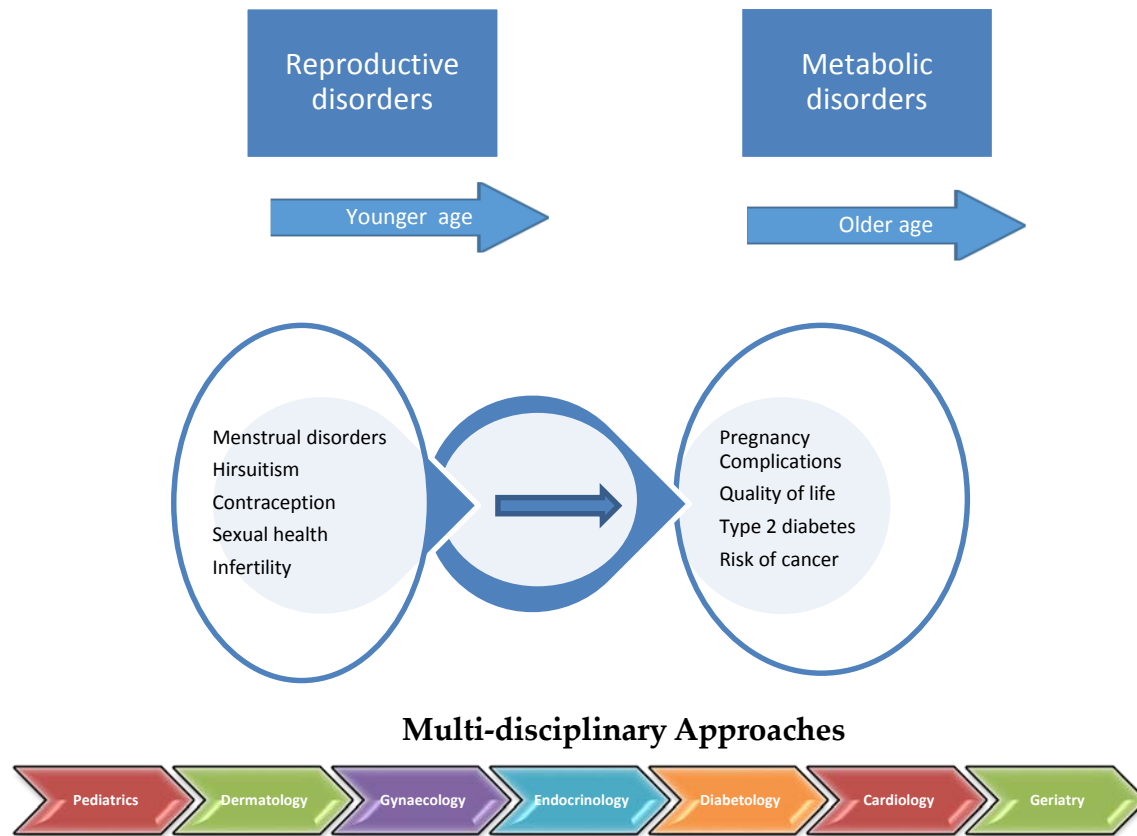


Figure 1: Schematic representation of the change in emphasis from early age reproductive disorders to long-term metabolic and cardiovascular health⁵.

Table 1. Diagnostic Criteria for PCOS

NIH 1990	Rotterdam 2003	AE-PCOS Society 2006
• Chronic anovulation • Clinical and/or biochemical signs of hyperandrogenism (with exclusion of other etiologies, e.g., congenital adrenal hyperplasia) (Both criteria needed)	• Oligo- and/or anovulation • Clinical and/or biochemical signs of hyperandrogenism • Polycystic ovaries (Two of three criteria needed)	• Clinical and/or biochemical signs of hyperandrogenism • Ovarian dysfunction (Oligo-anovulation and/or polycystic ovarian morphology) (Both criteria needed)

Table I: Definition of the phenotypes of the PCOS based on the 2003 Rotterdam criteria (Rotterdam ESHRE/ ASRM-Sponsored PCOS Consensus Workshop Group, 2003) practical

Phenotype 1 (‘severe PCOS’)	Had anovulation (8 spontaneous hemorrhagic episodes/year), biochemical hyperandrogenism (high early follicular phase testosterone levels or clinical manifestations of hyperandrogenism (Ferriman–Gallwey score ≥ 8) and PCO (≥ 12 follicles with a diameter of 2–9 mm in at least one ovary and/or ovarian volume - 10 cm ³).
Phenotype 2 (‘anovulatory PCOS’)	Had anovulation, hyperandrogenism and normal sonographic appearance of the ovaries.
Phenotype 3 (‘ovulatory’ PCOS)	Had hyperandrogenism and PCO without anovulation.
Phenotype 4 (‘mild’ PCOS)	Had anovulation and PCO without hyperandrogenism.

Table II : Definition of the phenotypes of the PCOS based on the 2003 Rotterdam criteria (Rotterdam ESHRE/ ASRM-Sponsored PCOS Consensus Workshop Group, 2003)

PCOS phenotype	Anovulation	Hyperandrogenemia	Polycystic ovaries in transvaginal ultrasonography
1 (severe PCOS)	+	+	+
2 (anovulation and hyperandrogenemia)	+	+	-
3 (ovulatory PCOS)	-	+	+
4 (mild PCOS)	+	-	+

GREEN-TOP GUIDELINE 2014:

Recommendations in Polycystic ovary

Syndrome are the following:

Diagnosis of PCOS should be according to the Rotterdam consensus criteria.

PCOS diagnosed women should be made aware of the possible long-term risks to health that are associated with their condition.

Screening for gestational diabetes to women should be considered who have been diagnosed with PCOS before pregnancy and should be performed at 24–28 weeks of gestation.

Overweight PCOS, not overweight PCOS, advanced age (> 40 years) and PCOS, personal history of gestational diabetes or family history of type II diabetes with PCOS, should have a 2-hour post 75 g oral glucose tolerance test performed.

Annual glucose tolerance test should be performed in women with impaired fasting glucose or impaired glucose tolerance.

PCOS women with snoring and daytime fatigue/somnolence should be informed of the possible

risk of sleep apnea and investigation and treatment should be done when necessary.

PCOS women should be investigated for cardiovascular disease risk. This can be done by assessing CV risk factors like lack of physical activity, cigarette smoking, family history of type II diabetes, impaired glucose tolerance, type II diabetes, obesity, hypertension, dyslipidemia.

Hypertension must be treated but lipid-lowering treatment is not recommended.

Psychological problems should be evaluated in women with PCOS. Assessment of depression and/or anxiety should be routinely done and, counselling and intervention should be offered.

PCOS women with oligo- or amenorrhea may develop endometrial hyperplasia and later carcinoma, so it is best recommended to treat them progestones to induce a withdrawal bleeding at least every 3 to 4 months.

TVS should be considered in the absence of withdrawal bleeds or AUB.

Endometrial biopsy with or without hysteroscopy should be considered in all PCOS patients with thickened endometrium or endometrial polyps.

Breast and ovarian cancer does not appear to be associated with PCOS.

As the first line of treatment for women with PCOS, lifestyle changes including exercise, diet, and weight loss, with or without pharmacological treatment are initiated for improvement of long-term outcomes.

For the control of hyperandrogenaemia, weight reducing drugs may be used.

Anovulatory patients with a normal BMI and infertility can be considered for ovarian electrocautery as an alternative to ovulation induction.

If standard weight loss strategies fail, bariatric surgery can be an option for morbidly obese women with PCOS.

Abbreviations

PCOD: Polycystic ovary disease (PCOD)

IGF-1: Insulin-like growth factor-1 (IGF-1)

NIDDM: Non-insulin dependent diabetes mellitus (NIDDM)

NIH: National Institutes of Health (NIH)

AE: Androgen Excess (AE)

ESHRE/ASRM: European Society of Human Reproduction and Embryology/American Society for Reproductive Medicine

CV: Cardiovascular

TVS: Transvaginal ultrasound

AUB: Abnormal uterine bleeding

BMI: Body mass index

References

1. Polycystic Ovary Syndrome: What's in a Name? | The Journal of Clinical Endocrinology & Metabolism | Oxford Academic [Internet]. [cited 2018 Feb 11]. Available from: <https://academic.oup.com/jcem/article/99/4/1142/2537201>
2. Ibáñez L, Valls C, Marcos MV, Ong K, Dunger DB, de Zegher F. Insulin Sensitization for Girls with Precocious Pubarche and with Risk for Polycystic Ovary Syndrome: Effects of Prepubertal Initiation and Postpubertal Discontinuation of Metformin Treatment. *J Clin Endocrinol Metab*. 2004 Sep 1;89(9):4331–7.
3. Wu XK, Zhou SY, Liu JX, Pöllänen P, Sallinen K, Mäkinen M, et al. Selective ovary resistance to insulin signaling in women with polycystic ovary syndrome. *Fertil Steril*. 2003 Oct 1;80(4):954–65.
4. Dunaif A. Insulin resistance and the polycystic ovary syndrome: Mechanism and implications for pathogenesis. *Endocr Rev*. 1997 Dec 1;18(6):774–800.
5. Fauser BCJM, Tarlatzis BC, Rebar RW, Legro RS, Balen AH, Lobo R, et al. Consensus on women's health aspects of polycystic ovary syndrome (PCOS): the Amsterdam ESHRE/ASRM-Sponsored 3rd PCOS Consensus Workshop Group. *Fertil Steril*. 2012 Jan;97(1):28–38.e25.
6. Lujan ME, Chizen DR, Pierson RA. Diagnostic Criteria for Polycystic Ovary Syndrome: Pitfalls and Controversies. *J Obstet Gynaecol Can JOGC J Obstet Gynecol Can JOGC*. 2008 Aug;30(8):671–9.
7. Panidis D, Tziomalos K, Misichronis G, Papadakis E, Betsas G, Katsikis I, et al. Insulin resistance and endocrine characteristics of the different phenotypes of polycystic ovary syndrome: a prospective study. *Hum Reprod*. 2012 Feb 1;27(2):541–9.
8. No GG. Long-term consequences of polycystic ovary syndrome. 2014;



Case Report

Mucocele of Appendix

Dr. Ajitha.K^{1*}, Dr. Vinoo Jacob², Dr. Philip Umman³, Dr. Vinod Joseph⁴, Dr. Deepak Johnson⁵,
Dr. Blessy MaryThomas⁶, Dr. Dahlia Joseph⁷

1,6, 7 Dept. of Pathology, 2,3.Dept. of General Surgery, 4. Department of Radiodiagnosis 5. Department of Gastroenterology, Believers Church Medical College. Email: ajithakdr@gmail.com

Abstract

We present a case of mucocele of the appendix in a 57 year old female who got admitted in our hospital with recurrent attacks of features resembling acute appendicitis. Initially she was managed conservatively in other hospitals. Colonoscopy in our institution showed edematous appendicular base. Radiological investigations done here suggested a diagnosis of mucocele of appendix. A right hemicolectomy was done with removal of intact appendix. Histopathology showed it to be a simple mucocele. The patient is doing well after one year now.

Introduction

Mucocele of the appendix is a rare disease. It was first described by Rokitsansky in 1842^[1]. Patients usually present with a palpable mass in the right iliac fossa associated with pain. CT of abdomen and pelvis is the radiological investigation of choice. The causes for the occurrence of this condition can be obstruction causing retention of mucus, hyperplasia of the epithelium and mucinous neoplasms, both benign and malignant^[2]. Exhaustive pathological examination of the specimen is very essential in excluding neoplastic causes for mucocele and thereby to decide upon further management of the patient.

Case report

A 57 year old female patient presented with pain in the right iliac fossa associated with fever, vomiting and urinary incontinence. She had attacks of similar complaints earlier which was treated conservatively. On examination, there was a mass palpable in the right iliac fossa. Routine lab investigations were within normal limits. Chest X-ray was normal. Colonoscopy showed edematous appendicular base. USG abdomen showed a soft tissue lesion with a pseudokidney appearance in the right iliac fossa suggestive of bowel mass. CECT abdomen showed a tubular structure in the right iliac fossa suggestive of

mucocele. Right hemicolectomy was done with the cystic mass intact. On gross examination of the specimen, the appendix appeared cystically enlarged, elongated, intact with no evidence of perforation and measuring 12 x 6 x 3 cm. On opening, the specimen showed distended lumen filled with thick tenacious mucus material. Wall appeared thinned out. Serosal surface of the colon and ileum appeared unremarkable. On opening showed congested and edematous mucosa. (fig1-2)

Fig -1



Fig-2



Microscopic examination showed cystically dilated appendix, thinned out wall containing congested blood vessels and focal aggregates of mononuclear cells. No hyperplastic or neoplastic epithelium was

identifiable despite extensive sampling. Lumen showed light staining mucinous material only. (Fig 3&4) Sections from the colon and ileum showed submucosal congestion and edema. Surgical resected margins appeared viable. With these findings a diagnosis of simple mucocele was made. There was no gross or microscopic evidence of perforation identified. Postoperative period was uneventful and the patient was discharged with advice for follow-up and is doing well now after a year.

Fig-3

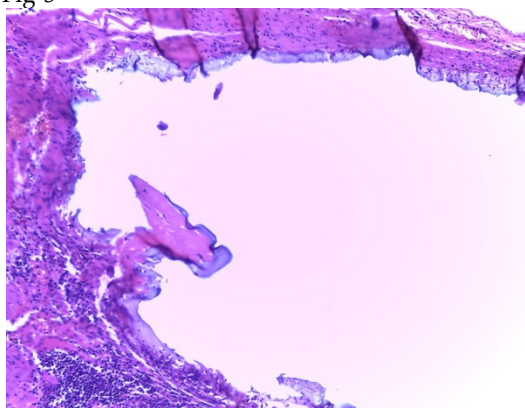
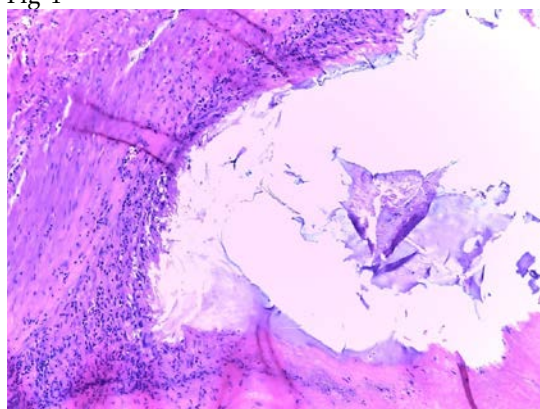


Fig-4



Discussion

The term 'mucocele' is just a gross descriptive terminology used clinically to indicate diffuse and cystic distension of the appendix with a mucus filled lumen and in itself is not a pathological diagnosis. The incidence of this clinical condition of the appendix varies from 0.3- 0.7 % of appendiceal pathology and 8 % of appendiceal tumors [3]. The condition is more common in females (4:1) and in people older than 50 years of age[4] It may remain asymptomatic and detected as an incidental finding. In about 50% of cases, it is discovered accidentally during radiologic and endoscopic examinations or at surgery.[5] When

symptomatic, clinical features more often overlap with other conditions mainly acute appendicitis and hence a preoperative clinical diagnosis of mucocele can be difficult.

Colonoscopy[6], ultrasonography and computed tomography are helpful in making a correct diagnosis[7]. Estimation of CEA and CA 19-9 levels in the serum has a role in excluding underlying malignant pathology [8]. In our case, the patient was a 57 year old female and the symptomatology was similar to acute appendicitis. A diagnosis of mucocele was suggested after radiological examination.

Recognition of the diagnosis during CT can be helpful as it enables the surgeon to decide on the type of management. Conventional surgery is preferred rather than laparoscopic surgery and careful resection is needed as spontaneous or iatrogenic rupture of the mucocele can lead on to pseudomyxoma peritonei with its inherent complications[9]

Pathologically, a mucocele falls under 4 different categories as follows: 1. Simple mucocele 2. Mucosal hyperplasia 3. Mucinous cystadenoma 4. Mucinous cystadenocarcinoma. Since no neoplastic or hyperplastic epithelium was identified even after studying multiple sections in our case, it falls in the category of simple mucocele. Exhaustive sectioning and study of the specimen is expected from the pathologist in view of the potential neoplastic etiology [10]. Careful examination for gross or microscopic perforation is also very essential.

Conclusion

Mucocele is a heterogenous entity encompassing both benign and malignant conditions. Knowing the pathology of this condition is important to make a correct diagnosis thereby leading to individualized treatment plans.

Conflict of interest: Nil

Funding: Nil

Ethical approval: Not required

References

1. Rokitsansky C. F. A Manual of Pathological Anatomy. Vol. 2. Philadelphia:Blanchard & Lea; 1855.
2. Papaziogas B., Koutelidakis I., Tsiaousis P., Goula O. C., Lakis S., Atmatzidis S., et al. Appendiceal mucocele. A retrospective analysis of 19cases. J Gastrointest Cancer. 2007; 38 (2-4):141-147.
3. Ruiz-Tovar J., Teruel D. G., Gastineires V. M., Dehesa A. S., Quindos P. L., Molina E. M. Mucocele of the appendix. World J Surg. 2007; 31 (3):542-548.
4. Aho AJ, Heinonen R, Laurén P. Benign and malignant mucocele of the appendix. Histological types and prognosis. Acta Chir Scand.1973;139: 392-400.
5. Mucocele of the Appendix: Case Report and Review of Literature. Zaza Demetrashvili, Mamuka Chkhaidze, Kakhi hutsishvili, Gega Topchishvili, Tamar Javakhishvili, Irakli Pipia, and Vakhtang Qerqadze
6. Zanati S. A., Martin J. A., Baker J. P., Streutker C. J., Marcon N. E. Colonoscopic diagnosis of mucocele of the appendix. Gastrointest Endosc. 2005;62(3):452-456
7. Bennett G. L., Tanpitukponqse T. P., Macari M., Cho K. C., Babb J. S. CT diagnosis of mucocele of the appendix in patients with acute appendicitis. Am J Roentgenol. 2009; 192(3):103-110.
8. Rymer B, Forsythe RO, Husada G. Mucocele and mucinous tumours of the appendix: A review of the literature. Int J Surg. 2015 Jun; 18: 132-57
9. Dixit A, Robertson JH, Mudan SS, Akle C. Appendiceal mucoceles and pseudomyxoma peritonei. World J Gastroenterol. 2007 Apr 28; 13 (16):2381-4.
10. Marudanayagam R., Williams G. T., Rees B. I. Review of the pathological results of 2660 appendectomy specimens. J Gastroenterol. 2006; 41 (8):745-749



Case Report

Antibiotic Associated Diarrhea

Dr. Deepak K Johnson, Department of Gastroenterology, Believers Church Medical College Hospital.

Email: johnson.deepak@gmail.com

Abstract: Clostridium difficile associated diarrhea is one of the leading healthcare related infections. It is associated with considerable morbidity and mortality. This is a review of its clinical presentation, diagnostic methods, the recent antimicrobials developed, fecal microbiota transplantation and the measures for infection control.

Case Vignette: A 65-year-old female with comorbidities of diabetes mellitus, hypertension and chronic kidney disease was admitted to the hospital for a surgical procedure. She had been given a third-generation cephalosporin for ten days. A gastroenterology consultation was sought in the second week of her hospitalization for persistent diarrhea of more than a week's duration. The diarrhea was watery, with a frequency range from 6-10. Except for mild tachycardia and bipedal edema, the physical examination was unremarkable. The laboratory evaluation of blood sample revealed polymorphonuclear leukocytosis, elevated urea, creatinine and hypoalbuminemia. The stool analysis demonstrated numerous leucocytes, with no ova or cysts of common gastrointestinal parasites. A diagnosis of antibiotic-associated diarrhea was made after performing a colonoscopy and endoscopic biopsy as diagnostic tests.

Antibiotic associated diarrhea (AAD): AAD complicates 2-25% of antibiotic treatment courses. Rates of AAD are similar for oral and parenteral regimen. Most cases are self-limited and due to alteration of normal colonic flora leading to disturbances in degradation of unabsorbed carbohydrates and bile salts. Other causes include stimulation of intestinal motility, drug related allergic reaction, superinfection with organisms like Clostridium difficile, Staphylococcus aureus, Salmonella enterica etc. Severity can range from "nuisance diarrhea" to frank colitis. Clostridium difficile associated diarrhea (CDAD) accounts for only 10-20% cases of AAD, but it accounts for the majority of cases of colitis associated with antibiotic use.

Antimicrobial agents that predispose to C.difficile infection (Table 1)

Frequently	Sometimes	Rarely
Amoxycillin	Macrolides	Aminoglycosides
Ampicillin	Other	Carbapenems
Cephalosporins	penicillins	Chloramphenicol
Clindamycin	Sulfonamides	Metronidazole
Fluoroquinolones	Trimethoprim	Rifampicin
		Rifaximin

Clostridium Difficile: C. Difficile is an anaerobic, gram positive, spore forming, toxigenic bacillus, first isolated in 1935 from the fecal flora of healthy neonates¹. It was first described as a cause of diarrhea in 1978 and is now the most common infectious cause of nosocomial diarrhea. Traditional risk factors include exposure to antibiotics, prolonged hospitalization, proton pump inhibitor therapy, advanced age and major comorbidities. Despite advances in infection control and newer treatment options, there has been a steady rise in incidence and severity of CDAD, with considerable morbidity and mortality. This is attributed partly to the emergence of hypervirulent strains.

Clinical presentation: It varies from asymptomatic carriage, mild to moderate diarrhea to life threatening pseudomembranous colitis. Fever, crampy abdominal pain, watery diarrhea are the usual symptoms. Complications include hypotension, renal failure, anasarca due to hypoalbuminemia, toxic megacolon and bowel perforation.

Diagnosis: Diagnosis of CDAD is made on the basis of clinical presentation, stool tests, less commonly endoscopy or radiologic tests. Many patients develop

polymorphonuclear leukocytosis. A peripheral leucocyte count of more than $25,000/\text{mm}^3$ is associated with increased mortality. Stool culture for *C. difficile* is considered as standard criterion due to high sensitivity (94-100%) and specificity (84-100%). But high costs and long turnaround time limits its utility in clinical practice. Real time PCR is another standard criterion but it requires technical expertise and does not differentiate between asymptomatic carriage and symptomatic infection. Traditionally enzyme immunoassays for toxin A and/or toxin B are used since it yields quick results, is relatively inexpensive and has high specificity (75-100%) but is limited by moderate sensitivity². Lower GI Endoscopy is not routinely required except when there is high index of suspicion despite normal stool test results or disease severity demands rapid diagnosis. Endoscopy should be considered when alternate diagnoses needs to be excluded and in cases with ileus (fulminant colitis) in the absence of diarrhea since it allows direct visualization of pseudo membranes. Endoscopy can be normal in mild cases, show non-specific erythema, edema and friability in moderate cases. Presence of pseudo membranes is pathognomonic of severe *C. difficile* infection. Colonic biopsy may be normal in mild cases or show features of acute inflammation with neutrophilic infiltration. 'Summit or Volcano lesion' (focal ulceration of mucosa with eruption of inflammatory cells, fibrin and debris over the ulcer) is pathognomonic.

Plain abdominal X-ray might show dilated colon, toxic dilation or small bowel ileus with multiple air fluid levels. CT scan often shows nonspecific features like mucosal edema, thickened colon, peri colonic inflammation with or without ascites, usually without small bowel involvement other than ileus.

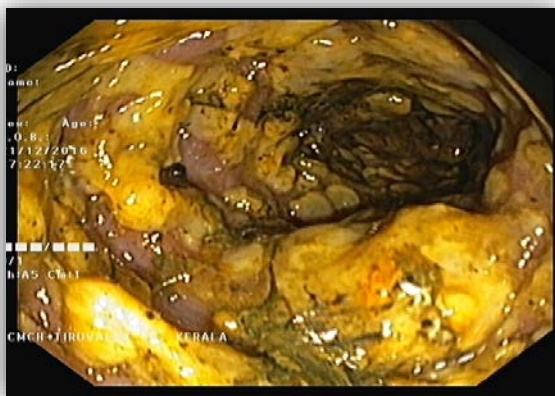


Figure 1: Colonoscopy showing numerous discrete and confluent pseudo membranes

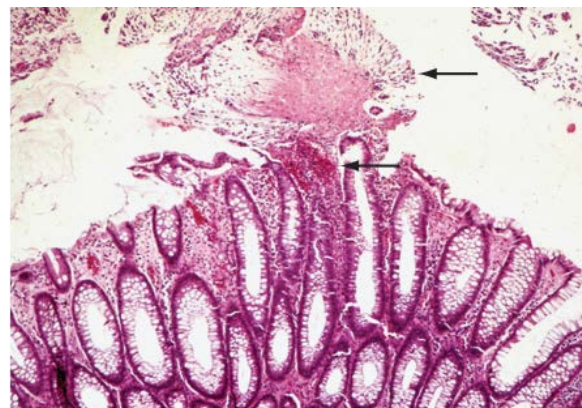


Figure 2: Histopathology from endoscopic biopsy showing 'summit' or 'volcano' lesion

Differential diagnosis: It is important to rule out other forms of colitis like Crohn's disease, Ulcerative colitis, Diverticulitis, Malabsorption syndromes, post infectious inflammatory bowel disease etc before starting definitive therapy for *C. difficile* colitis.

Treatment: The first step is to discontinue any precipitating antibiotic if possible. Discontinuation of all offending antibiotics alone leads to resolution of *C. difficile* infection in 15-25% cases. If additional antimicrobials are required, change to those least likely to exacerbate *C. difficile* infection.

Antimotility agents (loperamide) are to be avoided due to concerns for impaired toxin clearance and precipitation of colonic ileus and toxic dilation.

Metronidazole (orally 500 mg three times daily for 10-14 days) is generally recommended as the first drug of choice for mild to moderate cases of *C. difficile* colitis³. IV metronidazole (500 mg 4 times per day) may be used in patients who cannot tolerate oral medication, because it accumulates to reach bactericidal levels within the inflamed colon. Oral Vancomycin (250 mg 4 times daily for 10-14 days) is the drug of choice for severe cases and in those who are unresponsive or intolerant to metronidazole⁴. In patients who do not exhibit clinical improvement in 24-48 hours or those who develop complications (such as renal failure or ascites) dose may be increased up to 500 mg four times daily. Lower doses or Vancomycin (125 mg 4 times daily) suffice in mild-moderate cases. Oral Vancomycin is neither absorbed or metabolized significantly and hence achieve high colonic luminal concentrations with no systemic side effects.

Vancomycin may be given orally, by nasogastric tube or as retention enemas but not intravenously since adequate colonic luminal concentrations are not obtained with parenteral route.

Fidaxomicin is a novel macrocyclic antibiotic with minimal systemic absorption and relatively selective action on *C. difficile* with sparing of other intestinal bacteriae. Oral Fidaxomicin 200 mg twice daily for 10 days is as effective as Vancomycin for initial treatment of *C. difficile* colitis⁵. Post treatment recurrences are fewer in fidaxomicin treated patients. Other antibiotics like Teicoplanin, Nitazoxanide and Rifaximin have also are effective therapy for *C. difficile* colitis, although supporting data is limited.

The role of surgery is limited to cases with toxic dilation of colon, bowel perforation, systemic toxicity and failure to respond to medical treatment. However postoperative mortality is often high. Compared to partial resection, total colectomy is associated with a lower mortality rate.

Recurrence of *C. difficile* colitis occurs in 15-35% cases. This may be due to relapse of infection due to the original strain or reinfection due to a new strain. The risk of recurrence is higher in those who had more than one episode of *C. difficile* colitis and reflects poor host immune response. First recurrence is treated with a 14-day course of the same antibiotic used to treat the initial attack.

Strategies for multiple recurrences include Fidaxomicin, Vancomycin in tapered and pulse dose regimen, Vancomycin followed by Rifaximin regimen, fecal microbiota transplantation and IV immune globulin.

Adjunctive use of monoclonal antibodies against *C. difficile* toxin appears to reduce the recurrence rate of *C. difficile* infection. Bezlotoxumab (a monoclonal antibody that binds to *C. difficile* toxin B) received US Food and Drug Administration (FDA) approval in 2016 for secondary prevention of *C. difficile* infection in patients at high risk for recurrence.

Infection prevention and control: Infection with *C. difficile* can occur in both hospital and community setting. Control measures are based on three main strategies: (1) prudent use of antimicrobials, (2) prevention of cross-infection, and (3) active

surveillance of cases. The principal risk factor for *C. difficile*-associated disease is prior antimicrobial therapy, especially with broad-spectrum antibiotics. Components of a good antimicrobial control program include: prescribing short durations of antibiotics including one-dose prophylaxis, avoiding broad-spectrum antibiotics where possible, restricting intravenous antibiotics, using automatic stop dates, monitoring antibiotic use by specialty and employing antibiotic pharmacists. Since *C. difficile* produces highly resistant spores and spreads through faeco oral route, strict contact isolation is mandatory. Patients with suspected *C. difficile* infection should be isolated as soon as possible, preferably in a room with an ensuite toilet or else with a dedicated commode. During outbreaks, patients may be cohort nursed together if there are insufficient single rooms. Enhanced environmental and equipment cleaning, appropriate protective clothing for staff and strict hand hygiene reduces transmission of infection. Local surveillance programs should ensure prompt reporting of cases.

References

1. Hall I, O'Toole E. Intestinal flora in newborn infants: With a description of a new pathogenic anaerobe, *Bacillus diffcilis*. *Am J Dis Child* 1935; 49:390-402 .
2. Cohen SH, Gerding DN, Johnson S, et al. Clinical practice guidelines for *Clostridium diffcile* infection in adults: 2010 update by the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA). *Infect Control Hosp Epidemiol* 2010; 31:431-55
3. Peterson L, Gerding D. Antimicrobial agents. In: Rambaud JC, Ducluzeau R, editor. *Clostridium diffcile*-associated intestinal diseases. Paris: Springer-Verlag; 1990. pp 115-27
4. Teasley DG, Gerding DN, Olson MM, et al. Prospective randomized trial of metronidazole versus vancomycin for *Clostridium diffcile*-associated diarrhea and colitis. *Lancet* 1983; 2:1043-6
5. Louie TJ, Miller MA, Mullane KM, et al. Fidaxomicin versus vancomycin for *Clostridium diffcile* infection. *N Engl J Med* 2011; 364:422-31



Case Report

A Stitch in Time Saves Life

Dr. Benson Abraham, Dr. Sajith Sulaiman, Dr. Kannan R Nair, Dr. Mohan Verghese, Dr. John Valliattu
Department of Cardiothoracic Surgery, Believers Church Medical College Hospital
Email: abrahambenson@hotmail.com

Abstract

Stab injuries of the heart are uncommon but have a high mortality rate. The management of cardiac stab injuries is dependent on rapid diagnosis and prompt surgical repair. We report successful management of a patient with right ventricle penetrating injury with liver laceration. A 20-year-old male suffered from a stab injury in the left lower parasternal region leading to progressive cardiac tamponade. He underwent emergency median sternotomy with repair of right ventricle without cardiopulmonary bypass as well as laparotomy with repair of liver laceration and diaphragmatic injury. The postoperative course was uneventful and the patient recovered gradually over the week. The patient was discharged on the 7th day after surgery.

Key words:

Heart, Stab injury, Tachycardia, Hypotension, Tamponade, Median sternotomy

Case Report

A 20 year old male patient presented to the Emergency Department with stab injury in the lower part of sternum towards the left edge. Clinical presentation was with hypotension, tachycardia, engorged neck veins and abdominal rigidity. Emergency bedside echo showed progressively increasing pericardial effusion (Fig 1).

He was fluid resuscitated as per ATLS protocol and was immediately shifted to Cardiothoracic OR due to unstable hemo-dynamics and evidence of pericardial effusion. The OR suite was ready prepared for receiving the emergency case as per our department policy. Pre-induction vitals BP- 88/50 mmHg, HR- 124/min sinus rhythm, SpO₂- 92% room air, RR- 30/min. While fluid resuscitation was on going, standard monitors - pulse oximeter, 5-lead ECG and femoral arterial line was quickly inserted. General surgical team was intimated regarding possible need

for laparotomy. Induction of anaesthesia and intubation with controlled ventilation was performed with titrated doses of Etomidate, Opioids and muscle relaxants.

Post intubation, he developed severe hypotension with bradycardia suggestive of progression of tamponade. Immediate median sternotomy was performed and tamponade relieved following which hemo-dynamics improved. Meanwhile a quick prime of the cardiopulmonary bypass circuit and systemic heparinization was done. Pericardium was full of blood clots with active bleeding from the inferior border of the right ventricle which was digitally controlled. The right ventricle tear was repaired with 2Nos 4.0 pledgeted polypropylene sutures. During repair there were two episodes of ventricular fibrillation which was reverted by direct cardiac defibrillation. Trans-oesophageal echocardiography did not reveal any other intracardiac injury, hence the CPB circuit was used for auto-transfusion. Meanwhile a central venous access was established with triple lumen catheter for CVP monitoring and infusions.

There was a tear in the diaphragm with moderate hemoperitoneum. Through midline laparotomy, liver laceration of 4 cm on the diaphragmatic surface and 1 cm on the inferior surface of the left lobe and the diaphragmatic injury was repaired with catgut sutures. The stab injury reached up to the peritoneum on the posterior abdominal wall, however there was no visualised injury of the esophagus, gastrojejunal junction or stomach. Chest and abdominal closure was done. His postoperative period was uneventful and he was discharged with stable haemodynamics.

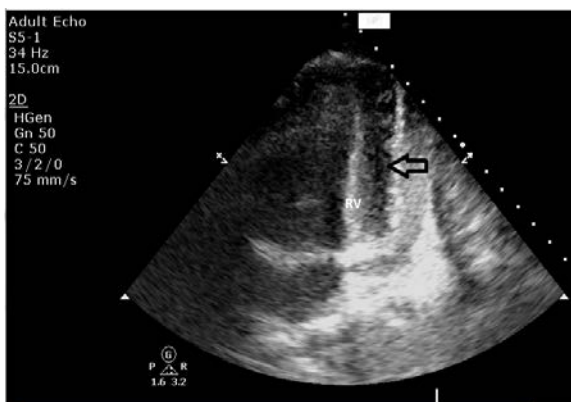


Fig 1. Transthoracic echocardiography showing significant pericardial effusion with RV compression suggestive of tamponade

Discussion

Cardiac stab injuries require prompt and specific treatment in order to decrease mortality and morbidity. The wounded heart is likely to follow one of the two courses: tamponade or exsanguination.

Beck's triad, consisting of distended neck veins, muffled heart sounds and hypotension, represents the classical presentation of the patient arriving in the emergency department with pericardial tamponade⁽¹⁾. Pericardial tamponade is the unique manifestation of cardiac injury. This decreases the ability of heart to fill, resulting in a subsequent decrease in LV filling and a lower ejection fraction; thus there is an effective decrease in cardiac output and stroke volume. Pericardial tamponade also provides a protective effect as it can limit extra-pericardial bleeding into the left hemi-thoracic cavity, thus preventing exsanguinating hemorrhage.

Stab wounds generally occur more frequently than gunshot wounds⁽²⁾. Cardiac rupture is a common cause of death after a cardiothoracic stab injury. The most common site of a cardiac stab injury is the RV because it has the greatest anterior exposure; this is followed by the left ventricle (LV), right atrium (RA), left atrium (LA) and the intrapericardial great vessels. The highest mortality rate is found for LV injury because this reflects pump failure and this is followed by RV and superior vena cava injuries^(3,4).

The key to successful management of these injuries is based on a high level of suspicion, the physical findings, immediate cardiopulmonary resuscitation, prompt diagnosis, excellent surgical technique and the ability to provide excellent critical care to these patients perioperatively (Fig 2). The most important

tool in the rapid evaluation of cardiac injury is echocardiography. Echocardiography can decrease the time needed to establish a diagnosis and thus it increases the survival rate. Furthermore, it also is useful in diagnosing abnormal pericardial fluid in doubtful cases⁽⁵⁾.

A median sternotomy is the incision of choice in patients admitted with penetrating cardiac wounds that may harbour an occult or nonhemodynamically compromising cardiac injuries⁽⁶⁾. This provides better exposure to all parts of the heart and is convenient if a cardiopulmonary bypass is needed. This incision also causes less postoperative pain and respiratory dysfunction than a thoracotomy. However, it gives poor access to the back of the heart. A left anterolateral thoracotomy is the incision of choice for the management of patients with penetrating cardiac injuries that arrive in extremes⁽⁶⁾.

The left anterolateral thoracotomy can be extended across the sternum as a bilateral anterolateral thoracotomy if the patient's injuries extend into the right hemithoracic cavity⁽⁷⁾. This approach is the incision of choice in a patient who is hemodynamically unstable or suffering from injuries that have traversed the mediastinum.

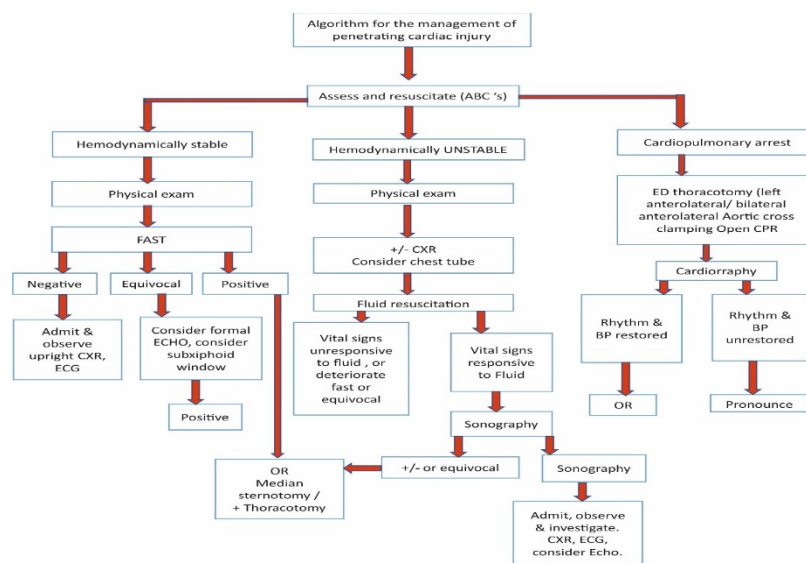
Volume restoration should proceed simultaneously with surgical intervention, preferably using whole blood or packed red blood cells. Internal cardiac compressions should be performed if the heart is not beating and arrhythmia should be treated with internal defibrillation and medication. Complications are common and may occur immediately. The most common immediate complications are respiratory in nature, such as atelectasis, residual pneumothorax, pneumonia, empyema, residual hemothorax and lung abscess. Multiple organ dysfunction related to hemorrhagic shock may also occur.

Cardiac functional complications may also occur and usually present late with the most delayed complication reported being a ventricular septal defect (VSD) by Dr Tesinsky⁽⁸⁾. The mortality rate for penetrating cardiac injuries varies widely and values from 19% to 65% have been reported⁽³⁾. Factors that are predictive of a poor outcome in terms of pre-hospital factors were reported by Dr. Asensio. They include the absence of vital signs, fixed and dilated pupils, the absence of cardiac rhythm, the absence of a palpable pulse and the absence of any motion in the extremities⁽⁷⁾. Dr. Tyburski reported that patients with

intrapericardial great vessel injuries or multiple chamber wounds have a lower survival rate than those with a single-chamber wound⁽³⁾. In patients with stab wounds, those with cardiac tamponade have a better outcome than those without tamponade⁽¹⁻⁴⁾.

Our patient presented with a stab injury to the chest with associated right ventricle, diaphragm and liver laceration. Emergency bedside echocardiographic evidence of pericardial effusion with unstable hemodynamics necessitated immediate transfer to Cardiothoracic OR where immediate decompression could be performed at the first instance of deterioration. The reason we preferred a median sternotomy was because of the unsurety of extent of intracardiac injuries which might have needed going on cardiopulmonary bypass. The second reason being, that the patient had evidence of concomitant abdominal injury necessitating a laparotomy which might have been difficult in the lateral position. Availability of a primed CPB pump proved to be a boon since auto-transfusion was possible precluding the need for large amounts of blood transfusion which otherwise may not have been readily available. Our patient had a good outcome due to the immediate diagnosis and despatch from the ER, quick transfer to cardiothoracic OR and prompt multidisciplinary management of the thoraco- abdominal injuries.

Fig.2



Source: Feliciano DV, Mattox K L, Moore EE: Trauma, 6th Edition

Conclusions

The key to successful management of a penetrating cardiac injury is early diagnosis and emergency surgical intervention. Echocardiography has high accuracy, specificity and sensitivity when detecting a penetrating cardiac injury. A left anterolateral thoracotomy should always be performed on patients who are hemodynamically unstable. This incision is most often used in emergency departments for resuscitative purposes. A median sternotomy is the incision of choice in patients with some degree of hemodynamic stability. Auto-transfusion in such a critical scenario helps in bailing out from the ill effects of massive blood transfusion expected in such fatal injuries. Penetrating cardiac injuries may be accompanied with concomitant diaphragmatic and abdominal viscus injuries which should not be overlooked⁹. These injuries are often lethal and have a poor prognosis; therefore medical personnel need to have a high level of suspicion with such injuries, which need to be treated aggressively with resuscitation, early diagnosis and early surgical repair.

Abbreviations: ER- emergency room, OR – operating room, ATLS- advanced trauma life support, BP – blood pressure, HR- heart rate, SpO2- oxygen saturation, RR – respiratory rate, ECG- electrocardiogram, CPB- cardiopulmonary bypass, CVP- central venous pressure.

References

1. Sava J, Demetriades D. Penetrating and blunt cardiac trauma: Diagnosis and management. *Emerg Med Australias* 2000; 12:95-102.
2. Mittal V, McAleese P, Young S, Cohen M. Penetrating cardiac injuries. *Am Surg* 1999; 65:444-8.
3. Tyburski JG, Astra L, Wilson RF, Dente C, Steffes C. Factors affecting prognosis with penetrating wounds of the heart. *J Trauma* 2000; 48:587-91.
4. Dedi SD, Bazard M, Budalica M. Penetrating injuries of heart and great vessels in patients. Wounded during the 1992-1994 war in Bosnia and Herzegovina. *Croat Med J* 1999; 40:85-7.
5. Harris DG, Janson JT, Wyk JV, Pretorius J, Rossouw GJ. Delayed pericardial effusion following stab wounds to the chest. *Eur J Cardiothorac Surg* 2003; 23:473-6.
6. Ohrt-Nissen S, Colville-Ebeling B, Kandler K, et al. Indication for resuscitative thoracotomy in thoracic injuries-Adherence to the ATLS guidelines. A forensic autopsy based evaluation. *Injury* 2016; 47:1019.
7. Asensio JA, Stewart BM, Murray J, et al. Penetrating cardiac injuries. *Surg Clin N Am* 1996; 76:685-724.
8. Tesinsky L, Pirka J, Al-Hiti H, Ma'lek I. Case report: An isolated ventricular septal defect as a consequence of penetrating injury to the heart. *Eur J Cardiothorac Surg* 1999; 15:221-222.
9. Degiannis E, Bowley DM, Westaby S. Penetrating cardiac injury. *Ann R Coll Surg Engl* 2005; 87:61-3.



Case Report

Hypocalcemia – A Rare Cause of Heart Failure

*Dr. Leena Thomas, Department of Interventional Cardiology, Believers Church Medical College Hospital.
Email: leenarichie@gmail.com*

Abstract

We describe a patient featuring refractory heart failure due to unrecognized hypocalcemia. The decompensated heart failure was rapidly reversed by aggressive calcium supplementation.

Introduction

The role of calcium in heart muscle contraction and relaxation is well established¹ There are a few reports in the literature documenting a causal relation between hypocalcemia and heart failure.

Case Report

A 65-year-old lady, presented with exertional dyspnoea, orthopnoea and bilateral lower limb edema for about 1 month. Cardiac examination revealed regular heart beat and an S3 gallop. Electrocardiography showed normal sinus rhythm with nonspecific ST-T changes and a

corrected QT (QTc) interval of 0.53 seconds (normal 0.36-0.43 seconds).

Cardiac enzymes were normal. Echocardiography demonstrated dilated left ventricle and global hypokinesia with ejection fraction of 18-20% (Figure 1A). Aggressive therapy with digoxin, spironolactone, intravenous nitroglycerin, dobutamine and furosemide failed to ameliorate the patient's clinical symptoms. Later, she developed recurrent episodes of tetany and marked hypocalcemia (plasma total calcium 5.0 mg/dL) was noted. A diagnosis of severe LV systolic dysfunction secondary to hypocalcemia, in the context of iatrogenic hypoparathyroidism following thyroidectomy (10 yrs ago), was made.

Intravenous calcium gluconate was started at a dosage of 1 gram every 6 hours. The patient became normocalcemic (8.0mg/dL) after calcium supplementation for 4 days, and electrocardiographic QTc interval returned to normal limits (0.48 seconds). LVEF increased to 28-32%. The cardiac symptoms improved dramatically in two weeks' time.

The patient was discharged under stable conditions and received oral calcitriol and calcium supplementation. Repeated ECHO after 3 months revealed marked improvement in LV systolic function (LVEF was 48-50%) (Figure1B).

Figure 1.

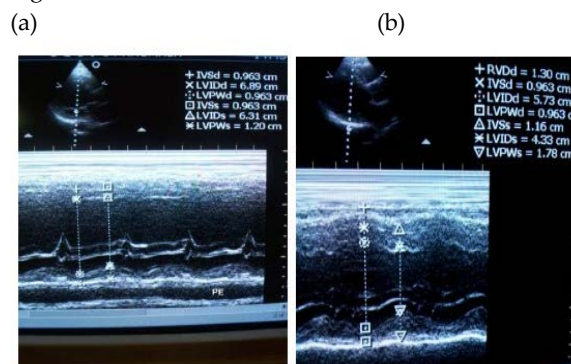


Figure1 A-B: M-mode parasternal long axis views of left ventricle; (A): Dilated LV, global hypokinesia, LVEF of 16 -20 % with pericardial effusion (PE); (B): Echo after 3 months: LV size markedly reduced, LVEF of 45-50% and no pericardial effusion.

Discussion

Although the kinetics of intracellular calcium is clearly related to muscle contraction and relaxation, the mechanism of myocardial dysfunction secondary to hypocalcemia is not fully understood^{1,2}. Cardiac performance is demonstrably reduced by hypocalcemia, with decreased myocardial contractility and hence decreased left ventricular stroke work index, ejection fraction and cardiac index². However, in the few cases in the literature describing heart failure as a complication of hypocalcemia, all patients recovered myocardial function when hypocalcemia was corrected, which supports the hypothesis that it is a reversible cause of heart failure^{3,4,5}. Cardiovascular manifestations of hypocalcemia vary from very mild and asymptomatic biochemical abnormality to severe,

even life-threatening disorders such as prolonged QT interval, ventricular arrhythmia, and heart failure^{4,5}. Many clinicians may be unaware of hypocalcemia associated with heart failure, since it is often ignored or only briefly mentioned in standard internal medicine. The hidden cause of heart failure due to hypocalcemia may be easily overlooked^{4,5}.

Furosemide should be cautiously used in heart failure patients with hypocalcemia. Since furosemide may induce hypocalcemia by increasing urine calcium wasting, the usual therapeutic measures for heart failure without calcium replenishment may not achieve satisfactory response. In this case, severe hypocalcemia might have been induced by furosemide during initial heart failure treatment, resulting in worsening clinical signs.

Conclusion

The case highlights the importance of considering hypocalcemia as a cause of heart failure, since myocardial dysfunction is rapidly reversible after correction of the metabolic disturbance.

References

1. Opie LH. Mechanisms of cardiac contraction and relaxation. 509-39.
2. Stulz PM, Scheidegger D, Drop LJ, et-al. Ventricular pump performance during hypocalcemia: clinical and experimental studies J Thorac Cardiovasc Surg. 1979;78:185-94
3. Bashour T, Basha HS, Cheng TO. Hypocalcemic cardiomyopathy. Chest. 1980; 78:663-5.
4. Suzuki T, Ikeda U, Fujikawa H, et-al. Hypocalcemic heart failure: a reversible form of heart muscle disease. Clin Cardiol. 1998; 21:227-8.
5. Chin-Sheng Lin, Shih-Hua Lin, Shu-Meng Cheng, Shih-Ping Yang and Tien-Ping Tsao. Reversible heart failure in a hypocalcemic patient. Acta Cardiol Sin 2009; 25:47-51.



Case Report**Rhabdomyolysis, Acute Kidney Injury and Encephalopathy complicating Salmonella typhi and Leptospira coinfection**

Dr. Rajesh Joseph R *, Dr Jency Maria Koshy**

*Department of Nephrology, Believers Church Medical College Hospital.

Email: doctorrajoseph@yahoo.co.in

** Department of Medicine, Believers Church Medical College Hospital.

Abstract

Typhoid is known to cause various complications. However rhabdomyolysis is a rare complication which is seldom encountered in Salmonella infection. In the tropics it is not unusual to have co infection of tropical fevers. This 29 years old male presented with encephalopathy, acute kidney injury and rhabdomyolysis. He was further evaluated for the aetiology of his illness and was diagnosed with salmonella typhi and Leptospira coinfection. He had a protracted course in the intensive care unit with renal replacement therapy. During the course of his illness, he also developed parotitis. However he made a steady progress with complete recovery.

Key words: Typhoid fever, Salmonella Typhi, Rhabdomyolysis, Acute kidney Injury, Encephalopathy, Leptospirosis.

Introduction

Typhoid is known to cause various complications. However Rhabdomyolysis is a rare complication of Salmonella infection. There are reports of coinfection of Typhoid with Leptospirosis. [1] We report a case of Typhoid with Leptospira co-infection complicated by Rhabdomyolysis, Acute Kidney injury and Encephalopathy.

Case Report

This 29 years old gentleman of Indian origin was working in Macau. He had loose stools for 2 weeks and fever for few days prior to the presentation. As he started from Macau he gradually became confused and missed his flight. He was helped by other co passengers to board the flight to India. When he arrived in India he was quite confused and was brought to our hospital from the airport. Relatives did not know the details of the illness. He was also noted to have oliguria. On examination he was confused and had asterixis. There were no other localizing signs.

Investigations revealed thrombocytopenia (Platelets-1lakh /mm³), renal failure (Blood urea 211mg /dl, Creatinine 7.57 mg/dl), Transaminitis (AST -164 U/l, ALT- 645 U/l) and rhabdomyolysis (CPK 31,246 U/L and Myoglobin in urine). [Table 1] A clinical diagnosis of acute febrile illness complicated with rhabdomyolysis and hepatorenal syndrome was considered. He was initiated on Injection ceftriaxone and Tab doxycycline along with haemodialysis. Patient was screened for various tropical fevers. Dengue NS1 antigen was negative, malarial parasite on peripheral blood smear and antigen testing for falciparum and vivax malaria were negative. Two sets of Blood culture were also sent. Leptospira antibody tested on the 3rd of illness was negative.

He continued to have watery diarrhoea. Stool examination performed was unremarkable. On the 3rd hospital day Salmonella typhi was isolated from both the sets of Blood culture confirming the diagnosis of Typhoid fever. Injection Ceftriaxone and doxycycline were continued. In view of encephalopathy associated with typhoid fever, 3mg /kg I.V over 30 minutes followed by 1 mg/ kg over 6hrs of 8 doses of dexamethasone were initiated. Cerebrospinal fluid study done was normal. Patient became fully conscious and oriented in the next 48 hrs even when his renal parameters continued to be markedly deranged.

Haemodialysis was continued with close monitoring of renal functions. Leptospira IgM ELISA sent on the 6th day of fever turned out to be positive. WIDAL done on the 15th day was positive (O 1:320, H 1:320, AH 1:320, BH 1:320). A possibility of Co infection of Typhoid fever with Leptospirosis was considered. On the 9th hospital day he developed left parotitis, which resolved gradually.

He had a protracted course in the hospital and continued to be on hemodialysis for 3 weeks. He had a gradual and steady recovery. His renal functions

eventually normalized (Creatinine 0.8 mg/dl and blood urea 19 mg/dl). [Table 1] He was followed up for 2 months thereafter.

Test	Day 1	Day 2	Day 3	Day 4	Day 6	Day 8	Day 11	Day 14	Day 20	Day 22	Day 33	Day 57
Hb ^a (g/dl)	15.3							8.4			11.2	14.2
TLC ^b (permm ³)	6400		5200	11,800			10,700	11,800	9000		8900	
DLC ^c (%)	N35, L60, E03		N80, L15, E02									
Platelet (lakh/mm)	1	1.5	1.5	1.4								
ESR ^d (mm/hr)	36											
PT ^e	14/16 .8 INR 1.25											
PTTK ^f	33/23 .7											
Sodium (meq/L)	125	134			140	138	143	141	138		139	
Potassium (meq/L)	2.7	2.7	3.1		4.1	4.2	4.1	4.7	4.1		4.8	
Blood urea (g/dl)	211	232	188		182	181	201	121	41		19	
Creatinine (g/dl)	7.57	9.28	8.27		6.9	6.2	8.09	6.5	2.01		0.8	
Calcium (g/dl)	7.1	6.9	7.6	7.7								
CPK ^g (U/L)	31,246									335		134
AST ^h (U/L)	164											
ALT ⁱ (U/L)	64											

Table 1 : Hematological and Biochemical Parameters

a-Hemoglobin,b-total leucocyte count,c- differential leucocyte count, d- Erythrocyte sedimentation rate, e- prothrombin time, f- partial thromboplastin time with kaolin,g- creatinine phosphokinase, h- aspartate aminotransferase, i- alanine aminotransferase

Discussion

This gentleman presented to us as acute febrile illness with encephalopathy, thrombocytopenia, Transaminitis, rhabdomyolysis and acute kidney injury. This syndrome can be seen in most of the

tropical fevers like Dengue, leptospirosis, Scrub typhus, Malaria and Typhoid fever.

We initiated Injection Ceftriaxone and Doxycycline. Diagnosis of Typhoid was confirmed as 2 sets of blood culture isolated *Salmonella typhi*. Leptospira antibody send on the 3rd day was negative and IgM ELISA sent on the 7th day of hospital was positive. [22.56 (>11 positive)] Considering the seroconversion, diagnosis of Leptospirosis cannot be refuted. Hence we considered this to be a co-infection of Typhoid and Leptospirosis. Though rhabdomyolysis has been reported in literature it is seldom found in both these illnesses. [2, 3] Neurological manifestations of Enteric fever reported in literature are typhoid delirium, encephalitis, psychiatric manifestations, cerebellar ataxia and meningitis. [4] Mathew et al reported that 10-15% cases among Leptospirosis have various neurological manifestations. [5]

There have been reports of mortality benefit in using high dose dexamethasone in Typhoid fever complicated with encephalopathy. [6] We used high dose dexamethasone in our patient and he had a marked improvement in his sensorium even when his renal functions continued to be deranged. Patient continued to be on regular hemodialysis for 3 weeks. However he had a complete recovery with his renal parameters, CPK and transaminases returning to normal.

Conclusion

Typhoid fever can be complicated with rhabdomyolysis, acute kidney injury and encephalopathy. In India Coinfection with other

tropical diseases as in this case is something Physicians should consider while treating these patients.

References

1. K. Mary Sushi, K.Sivasangeetha, A.Suresh Kumar, Pandi Shastri, A.Ganesan, D.Anitha et al. Seroprevalence of Leptospirosis, Enteric fever and Dengue in patients with acute febrile illness in Tamil Nadu, India. Indian Journal of Basic and Applied Medical Research; 2014: Vol.-3, Issue- 2, P.615-623.
2. Coursin DB, Updike SJ, Maki DG. Massive rhabdomyolysis and multiple organ dysfunction syndrome caused by leptospirosis. Intensive 2000 Jun; 26(6):808-12.
3. AliM, Abdulla H. *Salmonella typhi* infection complicated by rhabdomyolysis, pancreatitis and polyneuropathy. Arab 2011; 4(2):91-3.
4. Lakhotia M, Gehlot RS, Jain P, Sharma S, Bhargava M. Neurological Manifestations of Enteric Fever JIACM 2003; 4(3): 196-9
5. Mathew T, Satishchandra P, Mahadevan A, Nagarathna S, Yasha TC, Chandramukhi A et al. Neuroleptospirosis - revisited: experience from a tertiary care neurological centre from south India. Indian J Med Res. 2006 Aug;124(2):155-62
6. Bhutta ZA. Current concepts in the diagnosis and treatment of typhoid fever. *BMJ*. 2006 Jul 8. 333(7558):78-82



Case Report

Thyrotoxic Periodic Paralysis

Dr. Jibily Joy, Dr. Anulekha Mary John, Department of Medicine, Believers Church Medical College Hospital. Email: anulekhageorge@gmail.com

Abstract

Hypokalemia and transient lower limb paralysis in the presence of thyrotoxicosis occurring abruptly is termed thyrotoxic periodic paralysis. Here, we present a case of a 27 year old healthy gentleman who had thyrotoxic periodic paralysis. Increased sensitization of Na⁺/K⁺-ATPase channels as well as increased beta adrenergic state induced by the thyroid hormone results in intracellular shift of potassium and hypokalemia. Acute management consisted of potassium replacement and treatment of thyrotoxicosis.

Key words: Periodic paralysis, hypokalemia, thyrotoxicosis.

Case Report

A 27 year old healthy gentleman hailing from rural area of Kerala, presented with history of fall while trying to get off his car. He suddenly felt weakness of both legs and could not stand or walk and fell down. He felt paresthesia over both lower limbs starting from feet and progressing upward till his knees and to his hip, 2 weeks earlier. However, he was able to carry out his day to day activities without any difficulty till the day he fell. He did not have any upper limb weakness. There was no history of similar illness in the past.

There was no history of loss of consciousness, headache, vomiting, fever, seizure, diarrhea, nasal regurgitation, hiccups, nocturia, polyuria, dysphagia or breathing difficulty. He did not have any similar illness in any of his family members. This episode was not preceded by unusually heavy meal or unaccustomed exercises. He did not consume alcohol, indulge in smoking or any other substance of abuse.

On examination, he was conscious and oriented. His blood pressure was 120/70 mmHg and heart rate was 89 /min. He had normal neurological examination. His muscle power and deep tendon reflexes were within normal limits. Systemic

examination was unremarkable. Biochemistry showed hypokalemia with potassium: 2.1 mmol/L (3.50 - 5.30), Serum Magnesium: 1.82 mg/dl (1.6-2.4), Serum Calcium: 8.83 mg/dl (8.7-10.7), Serum phosphorous: 4.88 mg/dl (2.5-4.5) and Urine Potassium was 75.6 mmol/ L (25-125). Vitamin D was 35ng/ml (30 -100). Vitamin B12 was not done. His nerve conduction study showed acute motor axonal neuropathy. Potassium infusion was initiated and he improved dramatically.

His Thyroid functions showed hyperthyroidism. His anti-thyroid antibodies were positive -anti TG 318.49 IU/mL (0 -30), Anti TPO: 210IU/mL (0-35).

T3: 428 ng/dL (69 – 215)

T4: 23.91 µg/dL (5.20 – 12.7)

TSH: <0.01 mIU/mL (0.30 - 4.50)

He did not have Thyroid enlargement. He had mild tremors. He did not have features of Graves's Ophthalmopathy.

He was continued on intravenous as well as oral potassium correction despite which his potassium remained low. A diagnosis of thyrotoxic periodic paralysis was made and he was initiated on propranolol. He was explained about treatment options for thyrotoxicosis. He deferred I131 uptake scan and ablation therapy and opted for medical management. He was started on 30 mg carbimazole and over the next few weeks, his thyroid functions normalized and potassium supplements could be weaned off. He is on regular follow up and has completed 8 months of antithyroid drugs. The dose of carbimazole was reduced to 10 mg and thyroid function remains normal. His paralysis has not recurred.

Discussion

Thyrotoxic periodic paralysis (TPP), is a disorder characterized by abrupt onset of hypokalemia and paralysis. This condition primarily affects the lower extremities and is secondary to thyrotoxicosis. Hypokalemia in TPP results from an intracellular shift

of potassium induced by the thyroid hormone sensitization of Na⁺/K⁺-ATPase rather than depletion of total body potassium¹

Transcellular distribution of potassium is maintained by the Na⁺/K⁺-ATPase activity in the cell membrane, and it is mainly influenced by the action of insulin and beta-adrenergic catecholamines². It has been shown that the Na⁺/K⁺-ATPase activity in platelets and muscles is significantly higher in patients with TPP. Increased beta adrenergic drive in thyrotoxicosis further enhances the Na⁺/K⁺-ATPase activity³

Treatment of TPP includes prevention of this shift of potassium by using nonselective beta-blockade, correcting the underlying hyperthyroid state, and replacing potassium⁴. During periodic paralysis and marked hypokalemia, immediate supplementation with potassium chloride (KCl) is warranted to prevent major cardiopulmonary complications. Occurrence and severity of TPP does not depend on severity and etiology of thyrotoxicosis²

Learning points

Hypokalemia and TPP is a differential when acute motor axonal neuropathy is found on NCV.

Thyrotoxicosis is a cause for hypokalemia and periodic paralysis

References

1. S.H. Lin, Thyrotoxic periodic paralysis. Mayo. Clin. Proc. 80(1), 99–105 (2005).
2. Kalita J, Goyal G, Bhoi SK, Chandra S, Misra UK. Comparative study of thyrotoxic periodic paralysis from idiopathic hypokalaemic periodic paralysis: An experience from India. Ann Indian Acad Neurol. 2012; 15(3):186–90.
3. Annie W. C. Kung; Thyrotoxic Periodic Paralysis: A Diagnostic Challenge, The Journal of Clinical Endocrinology & Metabolism, Volume 91, Issue 7, 1 July 2006, Pages 2490–249.
4. Balakrishnan RK, Chandran SR, Thirumalnesan G, Doraisamy N. Thyrotoxic periodic paralysis. Indian J EndocrinolMetab 2011; 15(Suppl2): S147- S149



Case Report

The “Invisible” Liver Lesions

Dr. Sujith Philip, Department of Gastrointestinal Surgery, Believers Church Medical College Hospital.

Email: drsujithphilip@gmail.com

Abstract

This case report illustrates the case of a gentleman who had a neuroendocrine tumour of liver which was suspected based on Chromogranin A levels but was invisible on Contrast enhanced CT. This lesions was then detected by DOTATOC PET Scan with patient subsequently undergoing a hepatectomy.

Case Vignette

A 48 year old gentleman presented with abdominal pain, not associated with history of watery stools or cutaneous flushing. Based on the findings of the CT abdomen and colonoscopy, he was diagnosed with an ileocolic intussusception with a lead point at the ileum. He underwent laparoscopic right hemicolectomy and the lead point identified as a carcinoid tumour of the ileum based on the findings of the histopathology report. His chromogranin A levels were found to be persistently elevated to 75 ng/ml even after the surgery when normal levels of Chromogranin A is less than 39 ng/ml. The urinary 5 hydroxy indole acetic acid was negative. A triple phase contrast enhanced CT abdomen and chest was done, three months later to detect lesions, that could raise Chromogranin A levels (figure 1). This being negative, the patient was subjected to a Ga-DOTATOC PET CT scan. This revealed a 2.3 cm lesion in the left lobe, segment 2, of the liver with high uptake (figure 2). He underwent a left lateral hepatectomy based on his PET CT findings (figure 3). The histopathology result confirmed the presence of metastatic carcinoid lesion in the liver. Patient had an uneventful recovery and is currently doing well, after ten months of regular follow up.

Discussion

Hepatobiliary surgery is based on the findings of imaging studies. CT and MRI scans are the workhorses for the surgeon as far as surgical resection is concerned. We have presented here a patient whose standard radiological images were negative and underwent liver resection

Metastatic carcinoid lesions of ileum to liver are rare tumours. They usually present with features of hyper secretion of indole amines, with resultant loose stools and cutaneous flushing. Standard work up include CT /MRI and somatostatin receptor based scintigraphy or Ga-DOTATOC PET CT.

Key Message

This presentation, illustrates the importance of further radioisotope studies, in a patient whose biochemical parameters warrant them. CT scans have a high sensitivity of 73-85 % in carcinoid tumours of liver¹. Further work of a patient is not routinely indicated when triple phase contrast enhanced CT liver is normal. However, newer guidelines incorporate receptor based scintigraphy and PET CT in work up^{2,3}. In this case, the borderline elevation of chromogranin A levels was the indication for further work up. The Ga-DOTATOC PET CT, identified the “invisible” lesions on the regular triple phase contrast enhanced CT liver and the patient was able to undergo a curative surgery.

Fig 1: CT Abdomen showing no lesions in the liver.



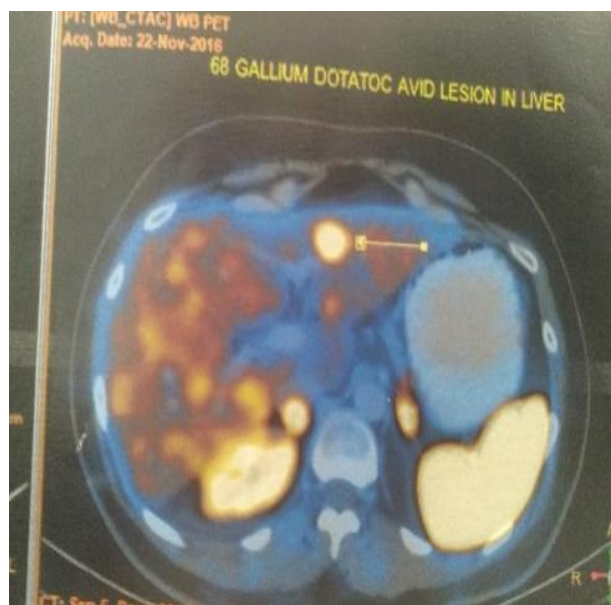
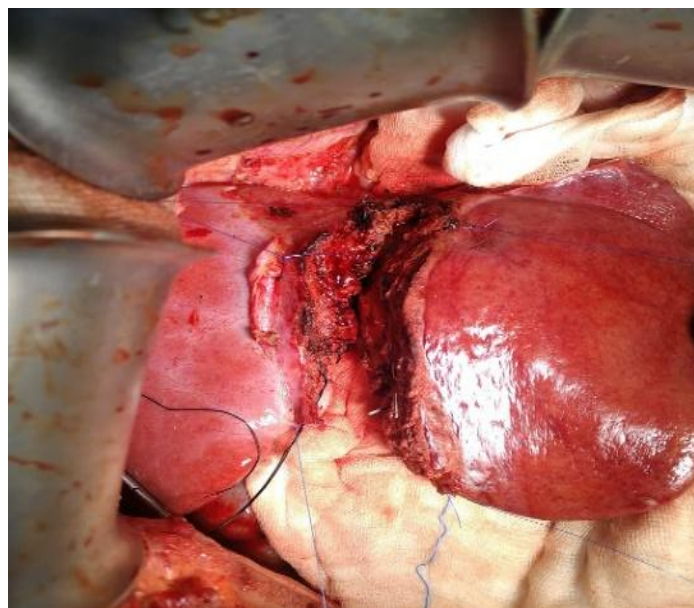


Fig 2: GaDOTATOC PET CT showing lesion in the left lobe of liver.

Fig 3: Left lateral Segmentectomy specimen.



References

1. Bhosale P, Shah A, Wei W, et al. Carcinoid tumours: predicting the location of the primary neoplasm based on the sites of metastases. *Eur Radiol* 2013;23:400-407
2. Frilling A, Sotiropoulos GC, Radtke A, et al. The impact of Ga-DOTATOC positron emission tomography/computer tomography on the multimodal management of patients with neuroendocrine tumors. *Ann Surg*;252:850-856
3. Luis SA, Pellikka PA. Carcinoid heart disease: diagnosis and management. *Best Pract Res Clin Endocrinol Metab*.2016;30:149-158.



Improving the Quality of Patient Care by Engaging in Continuing Professional Development: A Prologue to the Series

Dr. Thomas V. Chacko, Dean, Medical Education & Professor, Community Medicine Believers Church Medical College Hospital. Email: drthomasvchacko@gmail.com

We are living in the era of aware and health conscious educated people driven by information-technology who expect quality service for the fees they are willing and choose to pay in a competitive world where hospitals are vying for getting the attention and serving the same client.

In this information technology driven world, the rate of new knowledge generation is high and so is the high rate of obsolescence. There is also the challenging (but for the better) trend of more reliance on evidence-based practice and so the doctor and the care providers have to keep themselves updated with knowledge and skills like never before to remain relevant in the world of health care provision.

In such a milieu, while engaging in quality improvement exercises like mortality meetings and medical audit, we are observing different and changing spectrum of patient expectations, demands and dissatisfaction and even violent outbursts on the part of patients or their accompanying family members. These are the signs and symptom of a malaise (the causes of which need to be diagnosed) for which a set of corrective measures or "treatment" needs to be undertaken to prevent or reduce such events in the future as well as to improve patient outcomes.

Practicing Clinicians who are conscious about their obligation to provide quality care to their patients and the need to remain competitive in their clinical practice, engage in update of their clinical (disease management) knowledge through **Continuing Medical Education (CME) Programs**. CME programs are usually in the form of lecture series (update knowledge) or sometimes as workshops (sensitize the need to develop some professional practice skills) and rarely as workshop series. So CMEs are mostly Teacher and disease centric and teacher driven and the

attending Clinician is mostly a passive learner who progresses mostly to awareness stage and very rarely is made capable to put the learning to practice (Clinical Practitioner centric). In India, CMEs are being organized by Professional Associations and Pharmaceutical Companies. They are sporadic and conducted as per the needs of the industry or the interests of the Professional Associations and market forces.

Continuing Professional Development (CPD) on the other hand, is mainly driven by the learner, the practicing clinician, in response to the clinician's learning need for professional development so as to be able to deliver improved quality of patient care & service delivery (Chan, 2002).

CME Workshop series & longitudinal programs like Fellowships and CPDs have mostly replaced "lecture only CMEs" because evidence based on Systematic Reviews (Cervero & Gains, 2015) on whether CMEs improve physician performance and patient health outcomes reveals that whereas CMEs they do increase physician performance and patient outcomes, this is more so when the CME is interactive, uses multiple methods, involves multiple exposures, are longer and are focused on outcomes that are considered as important by physicians. This study supports finding of earlier systematic reviews on effectiveness of different methods (Stienert et al) on the effectiveness of various modalities of CMEs like lecture series and workshops have been found to be less effective than longitudinal programs like Workshop series, Workshop series followed by Retreats and Longitudinal Programs delivered through Fellowship Programs that focus on specific set of professional skills development (Competency-based).

What is CPD and how is it different from CME?

The Academy of Medical Royal College, UK describes CPD as "A continuous process, outside formal

undergraduate and post graduate training, that allows individual doctors to maintain and improve standards of medical practice through the development of knowledge, skill, attitude and behaviour. CPD should also support specific changes in practice.” Thus whereas CME involves updating only medical knowledge, CPD embraces developing and improving a broad range of skills necessary for medical practices.

The Educational Rationale & Need for a CPD Program series in India

Studies have shown that over a period of time, professional skills wane if the physician does not engage in deliberate practice (Ericsson KA, 2008). The CPD modality of Physician Education is now the established norm in Western countries where they have a system of certifying exams which help the practitioner to renew their License to practice. In India there is awareness about the need to move on to this paradigm but there is scarcity of expertise with experience in designing such longitudinal programs that facilitate learning of needed competencies, documenting progress and certifying attainment of expected level of competencies.

Also, being learner centered, this process is new to the practicing clinician who has so far been exposed to passive learning from attending CMEs.

Essential components of an effective CPD Program aimed at improving clinician's capability

The longitudinal programs in CPD that are aimed at capacity building of the learner (in this case a busy Clinical Practitioner), being rigorous and time intensive, motivation of the learner in engaging in continuous self-improvement is the key.

Best evidence (Grant et al) suggests that **effective CPD is characterized by the presence of three factors:**

1. A clear need (perceived by the clinician) for the particular CPD to be undertaken.
2. Learning is based on the such identified need. Follow-up provision is made for reinforcing the learning accomplished and so if we want to design an effective CPD Program, apart from focusing and addressing specific competencies needed for

the care of patients with the diseases, the clinical practitioners need to acquire **generic skills essential for acquiring/improving competencies** to bridge the gap between their current and expected level of competencies.

These **generic skills for CPD** include:

1. Self-Assessment of competency (identify Competency Gap),
2. Prepare a competency / Personal and Professional Development Plan,
3. Recognize and use Practice-Based Learning and Improvement (PBLI) opportunities at the workplace,
4. Engage in reflective practice and receive feedback from peers,
5. Do periodic self-assessment for progress,
6. Document evidence of progress (Portfolio of learning and improvement).
7. Collaborative learning with peers and with “The Community of Practice” (Clinical Practitioners undergoing the CPD)

Other generic skills for quality of care improvement include:

8. Improved communication skills,
9. Professionalism,
10. Working with teams to bring synergy to improve health care service delivery and
11. Engage in Continuous Quality Improvement.

The CPD program should address the above listed needs in addition to disease case management capabilities so that there is tangible and demonstrable improvement in capability of the clinical practitioner so that s/he values the worth of the program

This introductory write-up will be followed by articles on each of the generic CPD skills listed above in the issues of BeMJ that would follow the inaugural issue so that the conscientious and discerning care provider will engage in Continuing Professional Development to become an even more sought after doctor than you already are.

References

1. Chan KW. Medical education: From continuing medical education to continuing professional development” Asia Pacific Family Medicine 2002; 1: 88–90
2. Cervero RM & Gains JK. The impact of CME on physician performance and patient health outcome: An updated synthesis of systematic

reviews. Contin Educ Health Prof. 2015;35(2): 131–137.

3. Steinert Y, Mann K, Centeno A, Dolmans D, Spencer J et al. A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME Guide No. 8. Medical Teacher. 2006; 28, No. 6, , pp. 497–526.

4. Ericsson K. Deliberate practice and acquisition of expert performance: a general overview. *Acad Emerg Med*. 2008 Nov;15(11):988-94
5. Grant, J. Measurement of learning outcomes in continuing professional development. *J. Contin. Educ. Health Prof.* 1999; 19: 214-221.
6. Grant J, Chambers G, Jackson G, eds. *The good CPD guide*. Sutton: Reed Healthcare, 1999. -/



Spot Diagnosis: Clinical Problem Solving

Dr. Sumi Lukose, Dr. Jacob Koshy, Dr. Satish Thomas. *Department of Ophthalmology, Believers Church Medical College Hospital. Email: sumiluk@gmail.com*

A 63 year old male patient, presented to our outpatient services, with irritation and redness of the right eye of three days duration. He attributed the symptoms to the dusty environment, that he was exposed to, at the recent convention. There were no other systemic symptoms or signs. On slit lamp examination there

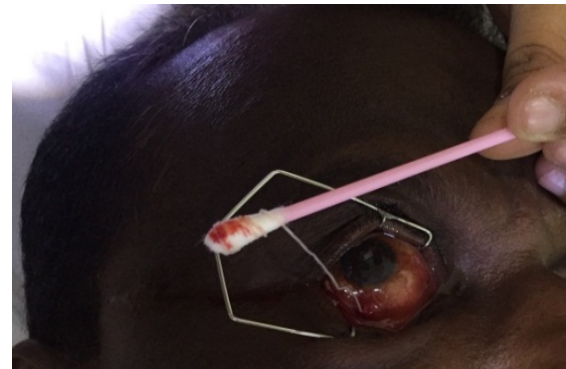
was a whitish vermiform sub conjunctival mass of 2 centimeters in the inferonasal aspect of the bulbar conjunctiva of the right eye (Fig1). It was non tender and showed persistent motion. There was no other swellings or lymphadenopathy elsewhere in the body. What is the diagnosis?



Fig. 1: Mobile subconjunctival vermiform mass.

Answer:

A live worm on microbiological testing was identified as *Diofilaria repens*. It was thin, cylindrical and whitish measuring 10cm x 0.5 mm. (Figure 3) with rounded ends. Histopathology revealed a thick cuticle with fine



external longitudinal ridges and prominent circumferential muscle layer with transverse striations. (Figure 4).The above findings identified the worm as *Diofilaria repens*. There was no eosinophilia.



Fig. 2: Dirofilariasis worm removal through a surgical incision through the sub conjunctiva. Fig 3: Whitish worm 10cm x 0.5 mm.

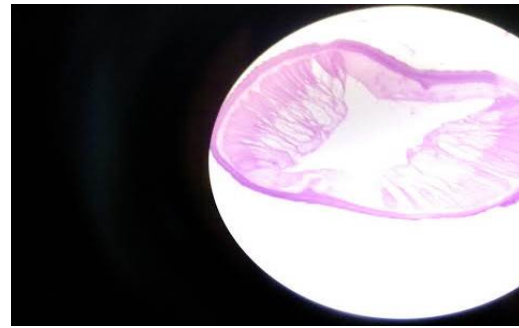


Fig 4: Histopathological section

Dirofilariasis is a helminthic infection caused by *Dirofilaria*. The genus is included in the class of nematodes.¹ It is a common zoonotic disease affecting canines, mostly dogs and cats. It is rarely transmitted, to man through arthropods. Mosquitoes are vectors for dirofilaria. Man is the final host for this parasite.² It is endemic to Mediterranean countries. The clinical forms of dirofilariasis in man are pulmonary, subcutaneous, ocular, and rarely, infections of the cerebrum, testicles, and female breast. Invariably they lead to an incorrect diagnosis of a malignant tumor.³ Six out of the 40 species are known to cause disease in man. *D. immitis* is responsible for pulmonary dirofilariasis, while *D. repens* is responsible for subcutaneous and ocular dirofilariasis. In the last decade, ocular dirofilariasis has been increasingly reported from countries, previously considered non-endemic, like South Asia and South India.⁴ Ocular dirofilariasis, reported in most of patients were located under the conjunctiva (>60%) orbital/eyelid dirofilariasis (25%), and rarely intravitreal and orbital dirofilariasis.

Common presentations include discomfort, ocular pain, and redness. Conjunctival dirofilariasis has been misdiagnosed as allergic conjunctivitis. Orbital or eyelid dirofilariasis present as a palpable mass. Removal of the parasite is the only treatment for ocular dirofilariasis. Subconjunctival *Dirofilaria* is removed through an incision in the conjunctiva (Fig 2). The entire parasite must be removed to avoid an allergic reaction due to parasite remnants. Anti-helminthic drugs are not indicated as *Dirofilaria* is reproductively inactive with a single location in man.

References

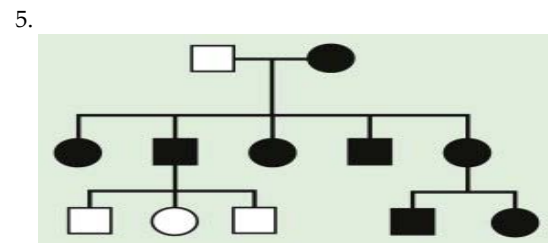
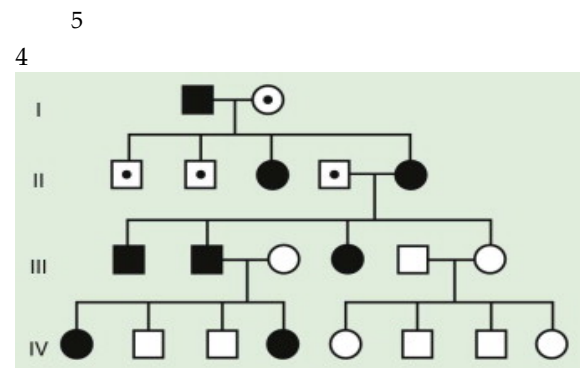
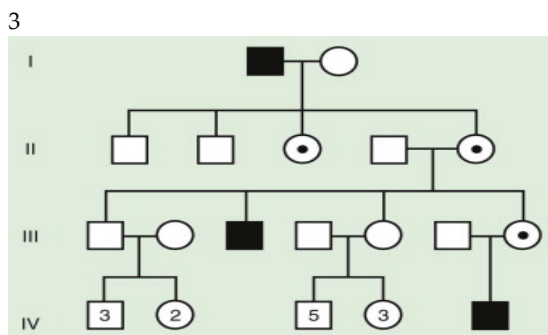
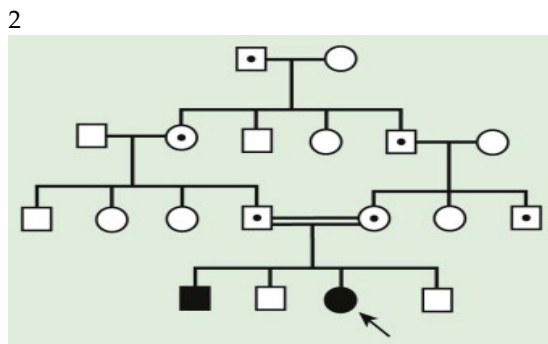
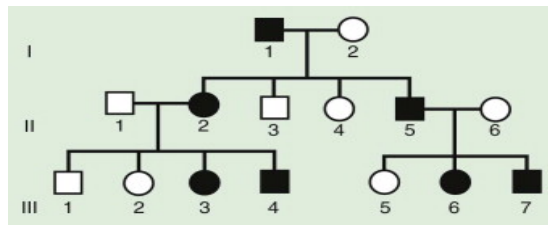
1. Nath R, Gogoi R, Bordoloi N, Gogoi T. Ocular Dirofilariasis. Indian J Pathol Microbiol. 2010;53:157-9.
2. Horst Aspöck. Dirofilaria and dirofilarioses. Introductory remarks; Proceedings of Helminthological Colloquium; 14th November; Vienna. 2003. p. 5.
3. Pampiglione S, Rivasi F. Human dirofilariasis due to *Dirofilaria* (Nochtiella) repens: An update of world literature from 1995 to 2000. Parassitologia. 2000;42:231-54. Chopra R, Panhotra BR, Al-Marzooq Y, Al-Mulhim AR. Subcutaneous dirofilariasis caused by *Dirofilaria repens*. Saudi Med J. 2004;25:1694-6

Pedigree Analysis

Dr. Sunil Raj, Department of Child Health, Believers Church Medical Hospital.

Email: sunil_raaj@yahoo.com.

Identify the pattern of inheritance from the following pedigree charts



Pedigree analysis

Step 1 – Check which gender is affected?

- If only males are affected – X linked recessive
- If both males and females are affected – can be AD, AR, X linked dominant or mitochondrial

Step 2 – Check who transmits the disease to the next generation?

- If only mother transmits the disease to the next generation – mitochondrial inheritance
- If both father and mother transmit the disease to the next generation – AD, AR or X linked dominant

Step 3 - If the disease is transmitted by the father – only daughters are affected and sons are normal

OR

- If the disease is transmitted by the mother – both sons and daughters affected and 50% of the next generation is affected - X linked dominant

Step 4 – Check how much percentage of the 1st generation is affected

- 50% - check if both parents are normal or abnormal
- If one parent is affected and the other normal – AD
- If one parent is affected and the other heterozygous carrier – AR with pseudo dominance
- 25% affected – AR

None affected – check if 50% are heterozygous carriers – If yes – AR

Autosomal dominant inheritance

AD disorders are manifested in the heterozygous state – the disease will be manifested even if only 1 allele is abnormal

Vertical pattern of transmission

- o Parents and patients are similarly affected
- o If **one parent affected, 50% risk of recurrence** in each subsequent pregnancy
- o **Both sexes equally affected**
- o **Variable expressivity**
 - o Wide variation in the phenotype among affected individuals within a family
- o Unaffected members of the family will not transmit the disease

Autosomal recessive inheritance

AR disorders **manifest in the homozygous** state – both alleles at a gene locus are mutant

- o Both sexes equally affected
- o Both healthy parent carry the same recessive gene.
- o **Horizontal pattern of transmission**
- o Siblings are affected.
- o Parents phenotypically are normal, but genotypically abnormal – Heterozygous carriers

o Parental consanguinity :

The risk of an autosomal recessive disease in the offspring of a consanguineous mating between first cousins is 6 – 8%

X linked recessive inheritance

Only males are affected as there is no corresponding allele

- o **All his daughters will be carriers**
- o The disease will not manifest in females as the other X contains normal gene.
- o 50% daughters will be carriers if the mother is a carrier.
- o **Normal sons cannot transmit the disease.**
- o **Oblique pattern of inheritance**
 - o Only males on the maternal side are affected – maternal uncles, mother's maternal uncle's, mother's sister's sons

X linked dominant inheritance

All the daughters and none of the sons of an affected man will have the condition

- o Both male and female offspring of an affected female has 50% chance of inheriting the condition
- o Heterozygous females and hemizygous males are affected
- o Affected males are seldom born alive
- o Majority of the patients are heterozygous females
- o **No male to male transmission**

Mitochondrial inheritance

- o Both male and female children born to an **affected mother** will inherit the disease
- o All affected daughters will transmit the disease
- o Sons will be affected, but will not transmit the disease

1. Identify the pattern of inheritance from the following pedigree charts :

Answers to the Pedigree Charts

1. Autosomal dominant
2. Autosomal recessive
3. X linked recessive
4. X linked dominant
5. Mitochondrial inheritance

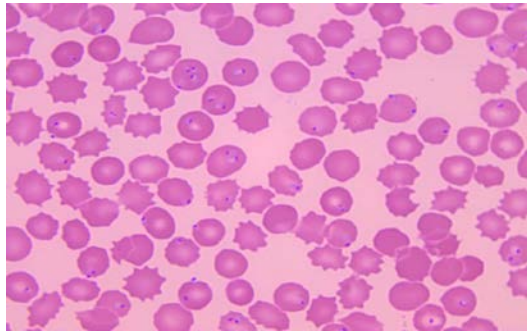
Picture Quiz -1

Dr. Sheila Das, Hematopathology Unit, Believers Church Medical Hospital.

Email: sheiladascmc2@gmail.com

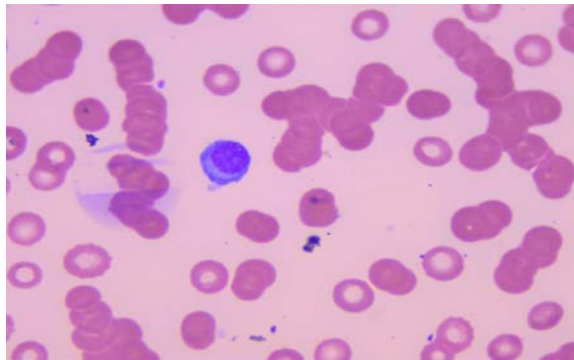
A: A 30 year old presented to the BCMCH Emergency Department with Fever.

What is your most important observation seen on the peripheral smear prepared?



B: A 64 year old presented to BCMCH Emergency Department with Fever.

1. What are your two important observations on the peripheral smear?
2. How will you proceed to investigate further?



Answer to Question A: Plasmodium Falciparum.
Answers to Question B: 1. Plasma cell and Rouleaux formation. 2 a. Serum / Urine protein electrophoresis b. Bone Marrow aspiration c. Xray s to seek lytic lesions.



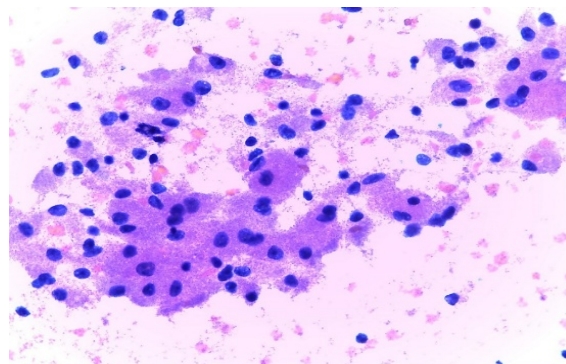
Picture Quiz- 2

Dr. Ajitha. K, Dr Dhanya Dinesh, Cytopathology Unit, Believers Church Medical Hospital.

Email: ajithakdr@gmail.com

Clinical Presentation: A 63 year old female, with a large fungating, vulval mass 8 x 8 cm, was noted in the Rt labia (vulva) with inguinal nodes. Initial blind FNAC, from the growth turned out to be inconclusive due to drying artifacts of the smear prepared. Incisional biopsy, showed atypical features, but could

not be labelled as a frank malignant lesion, using Fanburg-Smith criteria. Due to difficulty in performing an excision biopsy, an image guided FNAC of the inguinal lymph node was done. The cytology is seen in the figure below.



What is the diagnosis? Describe the smear.

Answer: Lymph node metastasis from a malignant granular cell tumour. The presence of large polygonal cells with abundant granular eosinophilic cytoplasm and round to oval nuclei showing moderate atypia is seen. This cytological smear from the inguinal lymph node aspirate, establishes the diagnosis of malignant granular cell tumor.

Discussion:

Salient features of a malignant granular cell tumor:

Granular cell tumours affect persons of wide range of ages. Most patients are middle-aged, with a peak incidence in the fourth through sixth decades of life. More common in black population and in females these granular cell tumours are also known as Abrikossoff tumours. They are rare soft-tissue neoplasms, presumably derived from Schwann cells are usually benign, although some may be locally aggressive with atypical features. Granularity of the cells in these tumours is due to the accumulation of secondary lysosomes in the cytoplasm. Less than 2%

are frankly malignant, fast growth, aggressive behaviour, and poor clinical outcomes. The diagnosis usually is confirmed by assessment of the histomorphology. Malignant granular cell tumours is differentiated from a benign tumour by histological examination of the excised specimen using the Fanburg-Smith criteria. Differential diagnoses include renal cell carcinoma, rhabdomyosarcoma, and alveolar soft part sarcoma which are differentiated by their immunohistochemical profile.

References:

- [1] Fletcher CDM. Diagnostic Histopathology of Tumours, 4th ed. Philadelphia: Elsevier limited. 2013; 2045.
- [2] Fanburg-Smith JC, Meis-Kindblom JM, Fante R, Kindblom LG. Malignant granular cell tumor of soft tissue: diagnostic criteria and clinico pathologic correlation. Am J Surg Pathol. 1998; 22: 779-94. PMID: 9669341.

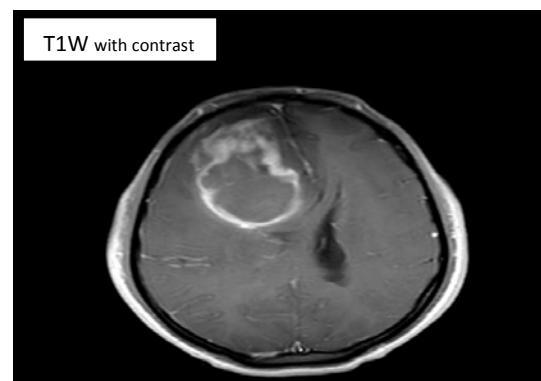
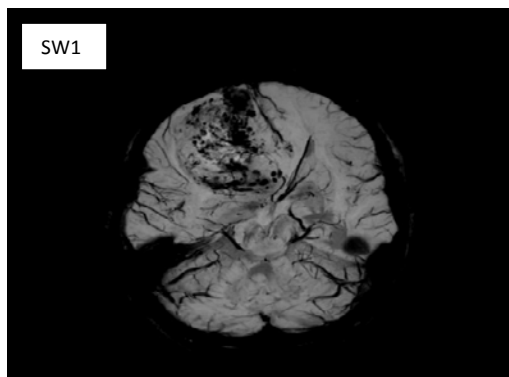
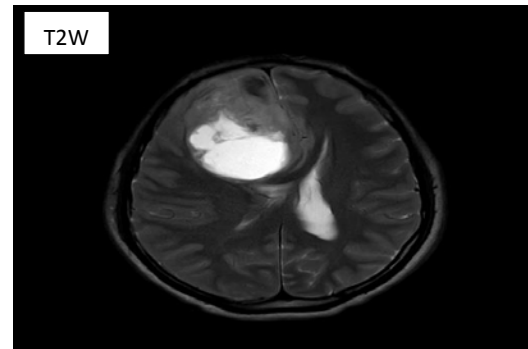
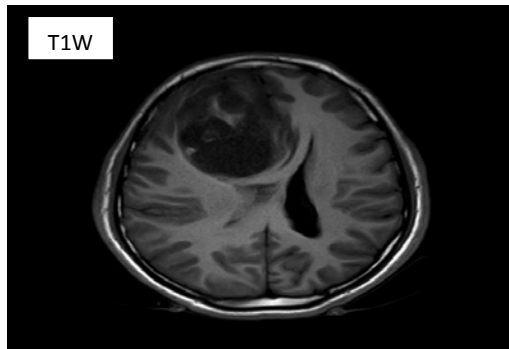


Picture Quiz – 3

Dr. Vinod Joseph, Radiology and Imaging Department, Believers Church Medical Hospital.

Presentation: A 35 year old male presented with persistent headache of 6 months duration.

What is the diagnosis? Describe the finding in the imaging modality seen?



Answer:

MRI shows a right frontal peripheral enhancing intra-axial lesion appearing hypointense on T1W and hyperintense on T2W with hemorrhage within. There is mass effect, seen as compression of the lateral ventricle with contralateral midline shift.

Discussion: Glioblastoma is the most common adult primary intracranial neoplasm. They are generally aggressive, largely resistant to therapy, and have a corresponding poor prognosis. Although glioblastomas can arise anywhere within the brain,

they have a predilection for the subcortical white matter and deep grey matter of the cerebral hemispheres, particularly the temporal lobe. They have a predilection for spreading along the condensed white matter tracts, to involve the contralateral hemisphere. They occur at a peak incidence between 65 and 75 years of age with a slight male preponderance with a 3:2 M:F ratio.

Rarely they are related to prior radiation exposure. They can also occur as part of rare inherited tumor syndromes such as neurofibromatosis type 1. Typically patients present in one of three ways: focal neurological deficit, symptoms of increased intracranial pressure, and seizures. Rarely (<2%) intra

humoral hemorrhage occurs and patients may present acutely with stroke-like symptoms and signs.

Glioblastomas are typically large tumors at diagnosis. They often have thick, irregular-enhancing margins and a central necrotic core, which may also have a hemorrhagic component. They are surrounded by vasogenic-type oedema, which usually contains infiltration by neoplastic cells. Multifocal disease, which is found in ~20% of cases, is that where multiple areas of enhancement are connected to each other by abnormal white matter signal, which represents microscopic spread to tumor cells. In multi-centric disease no such connection can be seen.

Tumor debulking with post-operative adjuvant radiotherapy and chemotherapy are the most commonly carried out treatment. Despite this, it carries a poor prognosis with a median survival of fewer than 2 years. **Response Assessment in Neuro-Oncology Criteria (RANO)** are used to assess response to first-line treatment of glioblastoma.

References:

1. Magnetic Resonance Imaging of the Brain and Spine by Scott W. Atlas
2. AIIMS-MAMC-PGI Comprehensive Textbook of Diagnostic Radiology by Khandelwal Niranjana.



IN MEMORIAM



Dr. N. G. Menon
(12 -6-1949 to 15-10 2016)

Dr N. G. Menon, son of Sri Narayana Menon, completed his MBBS from Patliputra Medical College, Ranchi University, Bihar in 1977. He did MS in General Surgery from Kottayam Medical College, Mahatma Gandhi University Kerala in 1988 and served in the Government Medical Colleges of Calicut, Kottayam and Kochi.

Dr Menon joined Believers Church Medical College in February 2016 as Associate Consultant and was the head of Surgical Unit 3 in the Department of General Surgery

.He was an erudite surgeon and delighted in taking classes for juniors while providing simultaneous good patient care. He had an excellent clinical acumen, delivered presentations and published papers in surgical journals during the short period that he was here with us. He passed into eternal rest on October 15th, 2016 after having left his mark in the short stint here as an affable and much loved surgeon.

Academic history:

- **Making Day Surgery a part of Surgical Curriculum** was presented by him at ADSON, the Conference of the Indian Association of Day Surgery at the Rajarajeswari Medical College and Hospital (RRMCH) Bengaluru on 29 April 2016.
- **Ectopic Breast tissue in the Axilla – A personal experience.** His publication was accepted by Day Surgery Journal India Feb 2016 12:11-14 daysurgery.in/wp-content/uploads/2016/07/DSJI.16.pdf



Dr. Jill Mathew
21 -7-1981 to 4- 3-2017

Dr. Jill Mathew daughter of Sri Mathew Kulathappalil Mathew, overall topper in MSc Biochemistry from Kerala University, completed her MBBS from the Vinayaka Missions University in 2011. Having topped in the Pharmacology examination, she completed her MD in Pharmacology from D .Y Pattil Medical College, Hospital and Research Centre, (Deemed University), Pune in April 2015.

She joined Believers Church Medical College Hospital on 1 August, 2016. She was supportive in establishing the Pharmacology department of this medical college. She was a good human being, hardworking, enthusiastic, straight forward and interested in research.

Academic history:

- **Dr Ajit Gokhale Prize for the Best Poster**
Presentation made at the XL Annual Research Society Conference of B.J Medical College and Sassoon General Hospitals 2014.
- **Evaluation and Comparison of effects of Donepezil and Aspirin on the Working Memory of Rats.**
Publication made in Research Journal of Pharmaceutical, Biological, and Chemical Sciences. We, the **Department of Pharmacology and BCMCH Family** pray that God consoles, comforts and uplifts the family of the departed soul. May her soul rest in peace.