

Chest X-ray with a Missing Heart -A Case Report

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ABSTRACT

Unilateral lung opacification in paediatric patients necessitates immediate assessment to determine treatable causes. We present the case of a 5 year old child who arrived with fever and breathing difficulties. A chest X-ray showed complete opacification of the right lung and an absent cardiac silhouette on the left side, creating a striking effect of a missing heart. Further investigations confirmed dextrocardia in a child with known Situs Inversus Totalis. A bronchoscopy revealed considerable mucus obstruction, and the therapeutic clearance led to notable clinical and radiological improvement. This case underscores the need for meticulous radiographic analysis in individuals with mirror-image anatomy and highlights mucus obstruction as a reversible factor for total lung opacification..

KEYWORDS *Situs inversus totalis, Dextrocardia, Lung opacification, Bronchoscopy, Mucus plugging, Paediatrics*

INTRODUCTION

Situs Inversus Totalis is an uncommon congenital condition marked by a mirrored arrangement of organs in the thorax and abdomen. With an estimated 3–5% prevalence of congenital cardiac disease, transposition of arteries, situs inversus is linked to dextrocardia. Kartagener syndrome may affect up to 20% of patients with situs inversus. This case highlights the difficulty in diagnosing a child's respiratory phenotype, anatomical aberration and metabolic abnormalities. Radiographic interpretation can be difficult when linked with respiratory symptoms. Misunderstanding dextrocardia can postpone the identification of related lung disease.¹

CASE REPORT

A 5 year old child was admitted with fever and trouble breathing. Upon examination, reduced air entry was observed in the right hemithorax. Oxygen saturation was slightly decreased. Chest X-ray showed total opacity of the right lung. Significantly, the cardiac silhouette appeared on the right side of the chest, lacking the usual left-sided cardiac shadow. This notable radiographic appearance initially created the illusion of an absent heart. Nonetheless, the discovery aligned with the child's earlier diagnosed situs inversus totalis accompanied by dextrocardia.

Due to ongoing respiratory distress and imaging results indicating potential lung collapse, flexible bronchoscopy was

conducted. It exposed widespread mucus blockage throughout the bronchial tree. The mucus plugs were extracted, succeeded by bronchial washing and chest physiotherapy. The child exhibited a steady clinical enhancement. A follow-up chest X-ray showed marked re-expansion of the right lung and disappearance of the opacity.

Additional assessment was conducted examining the link between situs inversus and primary ciliary dyskinesia. Genetic testing did not reveal pathogenic variants indicative of Kartagener's syndrome.¹



Figure 1: Chest X-ray displaying total opacification of the right lung with a cardiac silhouette on the right side, indicative of dextrocardia.



Figure 2: Chest X-ray after bronchoscopic clearance showing improvement in right lung opacity.

DISCUSSION

Unilateral lung opacification poses a diagnostic challenge that necessitates a thorough radiographic assessment to distinguish among lung collapse, consolidation, extensive pleural effusion and airway blockage. Atelectasis is usually marked by reduced volume, a shift of the mediastinum towards the affected side and elevation of the hemidiaphragm, while pleural effusion frequently causes a mediastinal shift to the opposite side of the

mass effect. Mucus plugging causing airway obstruction is a reversible factor in total lung collapse among children, and a systematic radiographic evaluation is crucial for precise diagnosis.²

Dextrocardia makes radiographic interpretation more complex. In individuals with Situs inversus totalis, thoracoabdominal organs are arranged in a mirrored configuration, potentially causing diagnostic confusion if imaging is not assessed systematically. Situs Inversus Totalis can be linked to disorders of mucociliary clearance like primary ciliary dyskinesia, which makes those affected more susceptible to ongoing respiratory infections and mucus buildup.^{3,4}

Current diagnostic and treatment approaches for primary ciliary dyskinesia highlight the importance of early detection and collaborative care. Consequently, early bronchoscopic intervention should be highly regarded for children exhibiting persistent unilateral opacification and suspected airway obstruction, especially in the presence of underlying ciliary issues.⁵

CONCLUSION

This case illustrates the management of mucus-related atelectasis in a child exhibiting situs inversus totalis and dextrocardia where timely bronchoscopic action remedied right lung opacification. Mucus obstruction is a manageable reason for one-sided lung collapse, especially in children with underlying mucociliary issues such as situs inversus. Dextrocardia produces a 'missing heart' X-ray effect, highlighting the necessity for thorough imaging evaluation to prevent diagnostic hold-ups. Prompt bronchoscopy with clearance, washing, and physiotherapy leads to quick clinical and radiological improvement, even in the absence of Kartagener's syndrome.

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