

Anomalous pulmonary venous drainage: chest radiography and cardiac imaging

INTRODUCTION

Sonstiel syndrome (or pulmonary veno-lymphatic syndrome) is a rare congenital cardiac condition characterised by abnormal pulmonary venous return from the right lung directly into the inferior vena cava. It can be associated with hypoplastic right lung, pulmonary artery hypoplasia and dextrocardia, among others.^{1–3} There are complete and incomplete variations. In the complete form, classically, the right lung is hypoplastic and is supplied by a systemic arterial branch from the aorta with hypoplasia of the right pulmonary artery, resulting in an abnormal right heart border on imaging.

Most cases are diagnosed incidentally and are asymptomatic. Surgical treatment is indicated if there is a large left-to-right shunt (>50%) leading to pulmonary hypertension. Other indications also include lung sequestration, recurrent right-sided chest infections, or recurrent haemoptysis notwithstanding secondary to systemic arterial pressure supplying the vessels of the lung.^{1–3}

We present a case of incomplete form of Sonstiel syndrome picked up by review of chest radiography and include images from other complementary cardiac imaging modalities.

CASE PRESENTATION

A 22-year-old woman, previously well, presented to our general medical unit with a cough and was investigated for a suspected chest infection. On admission, a chest radiograph was performed. This, somewhat surprisingly demonstrated radiographic

features consistent with either a right-sided pleural effusion or volume loss (figure 1A, thick arrow).

To investigate further, contrast CT of the chest was performed. No pulmonary thromboembolism was demonstrated during the arterial phase of the study; however, a clear abnormality was seen in the venous phase. The presence of a right-sided anomalous (Sonstiel) vein draining into the intrahepatic inferior vena cava (IVC) (figure 1B, arrow) was clearly visible, but no pulmonary sequestration was seen. In retrospect, this anomaly could be noted in the chest radiograph as well (figure 1A, thin arrow). The CT confirmed that there was demonstrable left-sided pulmonary venous drainage, but total absence of any direct right-sided pulmonary venous drainage into the left atrium (figure 1C, arrow).

We undertaken transthoracic and transoesophageal echocardiography to exclude associated cardiac anomalies and to reconfirm the absence of any direct right-sided pulmonary venous drainage into the left atrium. A right pulmonary vein (RPV) was draining into the intrahepatic portion of the IVC (figure 1D) was seen, and no right-sided pulmonary venous drainage into the left atrium was seen.

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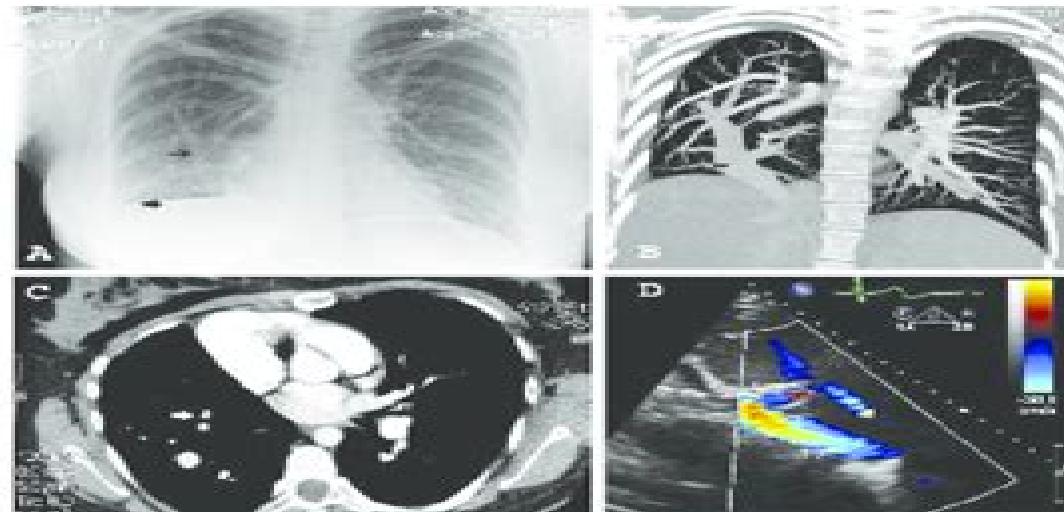
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Figure 1 Multi-modality radiographic (chest radiography (A), computed tomography of chest with contrast (B), CT and trans-thoracic echocardiographic (D, sub-costal view) images illustrating partial anomalous pulmonary venous drainage. This figure is only reproduced in colour in the online version.



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Cardiopulmonary Imaging Ella A. Kazerooni,Barry H. Gross,2004 Bogen indeholder bl.a en gennemgang af den normale brystkasses anatomi og grundlæggende fysiologi illustreret ved CT optagelser efterfulgt af en gennemgang af principper bag CT og MR scanning af brystkassen dokumentationspraksis samt gode råd til fortolkning af radiografiske optagelser af brystet En række thorax og hjerterelaterede radiologiske emner belyses bl.a lungekræft obstruktive lungesygdomme blodpropper i hjerte og lunger og forskellige radiografiske teknikker gennemgås bl.a HRCT spiral CT CT og MR angiografi samt PET scanning

Cardiac Imaging Charles S. White,Linda B. Haramati,Joseph Jen-Sho Chen,Jeffrey M. Levsky,2014-06-03 Based on the learning goals of the Society of Thoracic Radiology Curriculum in Cardiac Radiology Cardiac Imaging presents core knowledge that must be learned to accurately and effectively interpret cardiac imaging studies This book imparts essential facts about all imaging modalities and the basics of interpretation and technique in a concise and readable format Part of the Rotations in Radiology series this book offers a guided approach to imaging diagnosis Each pathology is covered within a targeted discussion that reviews the definition clinical features anatomy and physiology how to approach the image what not to miss differential diagnosis clinical issues key points and key references The book's manageable size is ideal for Residents use during training on a specific rotation and for exam review or as a quick refresher for the established Radiologist

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Comparative Cardiac Imaging Jing Ping Sun, Xing Sheng Yang, Bryan P. Yan, 2018-02-20 Provides the information necessary to guide clinicians to more efficient and appropriate use of the cardiac imaging modalities at their disposal Most books currently available on cardiac imaging focus on just modality As the number of imaging options has increased the choice of procedure has become more complicated This comprehensive book will guide the practitioner in choosing the most appropriate test when confronted by various cardiac symptoms and diseases and to understand the benefits and limitations of each imaging modality It demonstrates the advantages and disadvantages of various imaging modalities such as echocardiography computer tomography MRI and nuclear cardiology in the evaluation of various disease states both commonly and infrequently seen in a standard practice Comparative Cardiac Imaging A Case based Guide utilizes actual case examples to demonstrate the state of the art in comparative cardiac imaging It offers in depth chapter coverage of Aortic Diseases Aortic Valvular Diseases Mitral Valvular Diseases Prosthetic Valves Coronary Artery Disease Pulmonary Artery

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Advances in Cardiac Imaging and Heart Failure

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NonInvasive Cardiovascular Imaging: A Multimodality Approach Mario J. Garcia,2012-03-28 This textbook covers the fundamental principles of cardiovascular imaging modalities and their applications for the diagnosis of cardiovascular diseases The main focus is on the comprehensive diagnosis of clinical conditions disease entities through the most effective cardiovascular imaging test or combination The authors discuss the clinical utility and relative value of each test to address specific clinical questions based on evidence and expert opinion Each chapter presents information in the following format overview discussion of pathophysiology differential diagnosis diagnostic evaluation prognosis therapeutic guidance with illustration of treatment pathway A companion Website will offer the full text ten multiple choice questions for each chapter still and cine images and imaging clips

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Chandrasekharan,Djawid Hashemi,Sebastian Kelle,2022-07-04

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Barkhausen,2008-11-05 An excellent atlas on modern diagnostic imaging of the heart Written by an interdisciplinary team of

experts Cardiac Imaging A Multimodality Approach features an in depth introduction to all current imaging modalities for the diagnostic assessment of the heart as well as a clinical overview of cardiac diseases and main indications for cardiac imaging With a particular emphasis on CT and MRI the first part of the atlas also covers conventional radiography echocardiography angiography and nuclear medicine imaging Leading specialists demonstrate the latest advances in the field and compare the strengths and weaknesses of each modality The book's second part features clinical chapters on heart defects endocarditis coronary heart disease cardiomyopathies myocarditis cardiac tumors pericardial diseases pulmonary vascular diseases and diseases of the thoracic aorta The authors address anatomy pathophysiology and clinical features and evaluate the various diagnostic options Key features Highly regarded experts in cardiology and radiology offer image based teaching of the latest techniques Readers learn how to decide which modality to use for which indication Visually highlighted tables and essential points allow for easy navigation through the text More than 600 outstanding images show up to date technology and current imaging protocols Cardiac Imaging A Multimodality Approach is a must have desk reference for cardiologists and radiologists in practice as well as a study guide for residents in both fields It will also appeal to cardiac surgeons general practitioners and medical physicists with a special interest in imaging of the heart **Cardiac Imaging** Stephen Wilmot Miller,Lawrence M. Boxt,Suhny Abbara,2009-01-01 The updated third edition of this best selling Radiology Requisites9 volume concisely synthesizes all of today's core knowledge about cardiac imaging Clinically oriented coverage encompasses everything from basic principles through the latest diagnostic imaging techniques equipment and technology New coverage includes MR imaging of cardiac abnormalities electron beam CT fetal echocardiography and much more Practice proven tips and excellent problem solving discussions are accompanied by more than 800 images of the highest quality The result is an outstanding review source for certification or recertification as well as a highly user friendly resource for everyday clinical practice

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