Thoracic duct cyst in the mediastinum

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Abstract

A thoracic duct cyst was excised from the mediastinum of an 86 year old man. It had caused acute respiratory failure through compression of the trachea.

Thoracic duct cysts are rare among mediastinal tumours and cysts, and only 18 cases have been reported. We present a further case—which, unusually, caused acute tracheal compression—and reviewed the previously reported cases.

Case report

An 86 year old man was seen at the respiratory disease clinic of the Ehime Prefectural Central Hospital in May 1990 with deteriorating consciousness and sudden worsening of dyspnoea. A mediastinal mass had been noted elsewhere on a chest radiograph three years previously. He had been short of breath for eight months, but surgery was refused because of his age.

When seen the patient was comatose and cyanosed. Arterial blood gas analysis showed severe acidosis, hypoxaemia, and hypercarbia. Nasotracheal intubation was carried out immediately, and his respiratory condition improved considerably. A chest radiograph showed a mediastinal mass, 10 cm in longitudinal diameter at the level of the carina, displacing the oesophagus to the right. Computed tomography of the chest showed a large cystic lesion (8 by 4 cm) in the posterior mediastinum displacing the oesophagus and trachea anteriorly (figure). Fibreoptic bronchoscopy showed the distal trachea to be narrowed by a compressing extrinsic lesion, but the tracheal mucosa appeared to be normal.

Surgery was performed for a presumed mediastinal cyst. Exploration of the posterior mediastinum via a right posterolateral thora-

cotomy disclosed a cyst (10 by 5 cm), lying along the fourth and fifth vertebral bodies. The overlying mediastinal pleura was incised and the cyst freed from the vertebrae, trachea, and oesophagus by blunt and sharp dissection. A single pedicle was found at the upper end of the cyst. The cyst was completely removed after ligation of the pedicle.

The cyst was unilocular, the wall thickness varying from 0.5 to 2 mm. It contained yellowish serous fluid. Microscopically, the inner surface of the cyst was lined by a single layer of flat endothelial cells; the wall was composed of connective tissue, smooth muscle cells, and elastic fibres. Histologically, the cyst wall was similar in structure to the thoracic duct.

The postoperative course was complicated by chylothorax, which was successfully treated by repeat thoracotomy and ligation of the thoracic duct 15 days after the initial operation. The patient was discharged 14 days after the second operation and remains symptom free.

Discussion

Thoracic duct cyst is an extremely rare cystic lesion in the mediastinum. A review of published papers shows that only 18 cases have been reported since Emerson¹ described the first case to be diagnosed during the patient's lifetime in 1950.

The ages of the patients described have ranged from 20 to 86 (mean 47). There is no sex difference in incidence. Six of the 19 patients were symptomless; 13 had symptoms caused by compression of surrounding structures in the mediastinum. In our case and the one reported by Fromang and colleagues² tracheal compression resulted in acute respiratory failure requiring emergency endotracheal intubation. The other 17 patients had no serious symptoms. Benign enlargement of any structure will usually cause displacement of other structures without appreciable compression,² but acute compression may occur with a thoracic duct cyst.

A mass in the mediastinum was found on a chest radiograph in 16 cases. Since computed tomography has become available the differentiation between a cystic and a solid mass in the mediastinum is not usually difficult. It is not easy to distinguish between the different types of mediastinal cyst, however, and diagnosis of thoracic duct cyst was established preoperatively in only three cases.³⁻⁵ Lymphangiography^{3,4} and endoscopic ultrasonography^{6,7} may be helpful. Morettin and Allen⁵ reported a case of thoracic duct cyst diagnosed by means of needle aspiration and injection of contrast material into the cyst.

The communication of the cyst with the thoracic duct was mentioned in 17 cases. Both entry and exit pedicles were identified in six patients. The afferent vessel was not identified in four cases,⁸⁻¹⁰ two of which required further surgery for postoperative chylothorax.¹⁰ The histological features of the thoracic duct cyst, described in 15 cases, include lining of the internal surface of the cyst by endothelium

Computed tomogram of the chest showing a cystic mass in the posterior mediastinum, displacing the oesophagus and trachea anteriorly.

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(six cases) and smooth muscle in the cyst wall (six cases). Finding smooth muscle and elastic fibres in the cyst wall and identifying the communication between the cyst and the thoracic duct is the key to the diagnosis of thoracic duct cyst.

Thoracic duct cyst must be included in the differential diagnosis of symptomatic and asymptomatic mediastinal masses. Surgical excision is recommended so that a definitive histological diagnosis can be made, symptoms alleviated and complications prevented. Care must be taken to identify the communication of the cyst with the thoracic duct and secure the ligation of communicating pedicles, especially the afferent vessel, to prevent post-operative chylothorax.

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BOOK NOTICES

Respiratory Physiology. 2nd ed. John Widdicombe and Andrew Davies. (Pp 132; £9.95.) Sevenoaks: Edward Arnold, 1991. ISBN 0-340-55253-0.

This book forms part of the series "Physiological Principles in Medicine," in which books are published in pairs, one describing the basic physiology and the other being its clinical counterpart. Respiratory physiology is a second edition, which links to the clinical book in the series "Respiratory Disorders" by Cameron and Bateman. It is aimed at medical students studying for second MB and therefore assumes no prior knowledge. It should also be of interest to others, including nurses, respiratory technicians, and physiotherapists. The book is divided into 10 chapters and includes sections on lung structure, mechanics, pulmonary circulation, blood gas transport, and control of breathing. The final chapter describes the physiology of some special conditions, including breathing at altitude, underwater, and during exercise. It is well written and easy to read, with each chapter highlighting the relevant laws of physics and important basic principles. Each chapter concludes with a list of learning objectives to ensure that the reader has assimilated the main points. The illustrations are appropriate and clear. Overall it is a highly readable book describing the basic principles of respiratory physiology and at less than £10 represents good value for money. It is probably too small and superficial, however, to be of interest to those studying for postgraduate examinations.

PM

Assisted Ventilation. Edited by John Moxham. (Pp 93; £8.95, overseas £11.) London: British Medical Journal, 1991. ISBN 0-7279-0306-3.

This is an excellent small book. It deals with several key areas of respiratory intensive care, covering the indications for mechanical ventilation, care of the patient on a ventilator, and weaning. Two further chapters consider non-invasive ventilatory techniques. Although the editor has defined his potential readership as physicians unfamiliar with this area there is no doubt that the book will appeal to anyone working in an intensive care unit. Given the reputation of the editor for forthright explanation, it is not surprising that jargon has been avoided, with the result that the text is clear and readable. Certain chapters stand out. The section on weaning, written by John Moxham and John Goldstone, is up to date and will interest all clinicians concerned with this sometimes complex and prolonged process. Margaret Branthwaite's section on non-invasive ventilation is another fascinating account of a new technique with enormous application for the future. In case my selection of these chapters gives the impression that the others are of any less quality I hasten to add that this is not the case. They are uniformly of the highest standard, as is to be expected from the list of authors. Professor Moxham is to be congratulated on his selection of experts, who between them have managed to put together a first rate account of respiratory critical care. If the senior echelons of the Royal Colleges would insert a period of intensive care training into the programme of junior physicians, the targets of Professor Moxham's book might even be able to apply this knowledge.—RA

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