

HAEMANGIOMA OF THE MEDIASTINUM

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Mediastinal masses not infrequently present themselves as problems for diagnosis. Benign vascular tumours of the mediastinum are rare. Adams and Bloch (1944) reported a case in which the tumour was incompletely removed at operation. The patient was alive and well four years later. The subject was reviewed by Seybold, McDonald, Clagett, and Harrington (1949), who collected 14 cases from the literature and added three of their own. In a more recent report, also from the Mayo Clinic, by Ellis, Kirklin, and Woolner (1955) the definition of benign haemangioma is more strictly applied to the reported cases, and many of those previously reviewed by Seybold and others are excluded because they showed evidence of malignancy. Ellis and others in their review of the literature have discovered 18 cases and add one of their own. Of these 19 cases, 11 have had the tumours removed surgically. However, in one of the two patients reported by Schlumberger (1951), a malignant mediastinal tumour developed subsequently. Thus only 10 cases of benign cavernous haemangioma of the mediastinum have had satisfactory surgical treatment. The present case is considered worthy of record in view of the rarity of the condition, and it is believed to be the first case successfully operated upon in Great Britain.

CASE REPORT

In May, 1954, a man, aged 43, attended a mass miniature radiography unit. He had no symptoms. The chest radiograph showed a dense mass situated in the anterior mediastinum (Figs. 1 and 2). The patient was seen at intervals. He remained well and the chest radiographs showed little change until January, 1955, when it was thought that the mass had enlarged slightly. He was admitted to the Thoracic Unit, Clare Hall Hospital, for further investigation. On admission the patient appeared healthy and no abnormal physical signs were detected in the chest or in the heart. Antero-posterior and lateral tomograms confirmed the presence of a spherical mass approximately 9 cm. in diameter situated in the left anterior mediastinum at the level of the arch of the aorta. In the lateral tomograms small flecks, which were more radio-opaque

than the rest of the mass, could be seen. Unfortunately these are too faint to be picked out in a reproduction. In retrospect these shadows are presumably due to phleboliths. Bronchoscopy and bronchography showed no abnormality of the major bronchi, and the barium swallow showed that the oesophagus was neither displaced nor constricted. Pulmonary angiography showed a normal pulmonary arterial pattern; the tumour was not filled with dye (Fig. 3). A blood count was normal and serological tests for syphilis were negative. As the nature of the tumour could not be determined by other means it was decided to perform a diagnostic thoracotomy. On February 7, 1955, the chest was opened through a left antero-lateral incision and a large mass, partly cystic, partly solid, was found in the anterior mediastinum. It was adherent to the lung and to the pericardium, but most of the tumour shelled out easily. An extension of the mass around the arch of the aorta was dissected out with some difficulty, and the vagus and recurrent laryngeal nerves were identified and preserved. The left phrenic nerve appeared to run through the tumour and had to be divided. A large branch of the vena hemi-azygos ran into and presumably drained the tumour; this was ligatured and divided. The mass was then removed. Post-operative progress was uneventful, and the patient is now, eight months later, well and working.

PATHOLOGICAL REPORT

The specimen is an ovoid, soft, nodular, dark red mass 11 by 7 by 4 cm. (Fig. 4). The surface is covered with fine adhesions with some adipose tissue. Numerous small blood vessels traverse the surface and a single large vein, approximately 4 mm. in diameter, is present near one pole. The mass consists entirely of cavernous blood spaces varying in size from 4 by 2 by 2 cm. to less than a millimetre in diameter. The spaces intercommunicate, and numerous phleboliths are present in those of medium and small size. The outer zone is not sharply demarcated and some vessels extend into the adipose tissue. There is no true capsule.

Histologically the cavernous spaces have no organized structure apart from an endothelial cell lining. Fibrous tissue is the basic element of the walls. In it are bands of smooth muscle with no uniform orientation, islands of fat cells, and an overall lymphatic and plasma cell infiltration with a tendency to the formation of dense aggregates of these cells. An occasional

arteriole can be identified. The microscopical appearances are those of a cavernous haemangioma, the lesion being a hamartoma. There is no evidence of malignancy.

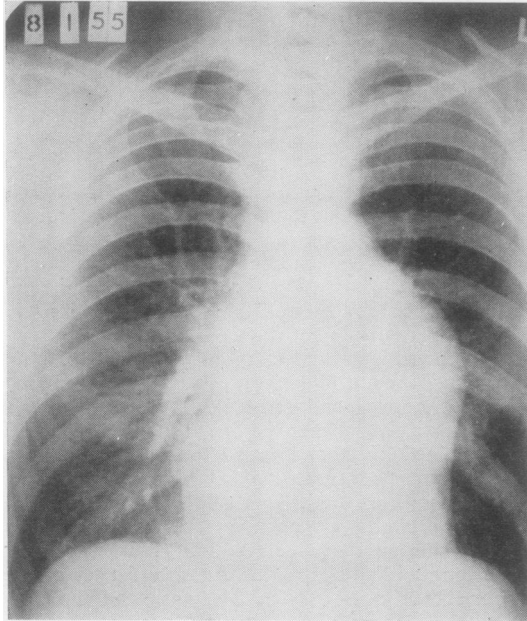


FIG. 1.—Postero-anterior radiograph of the chest showing the tumour.

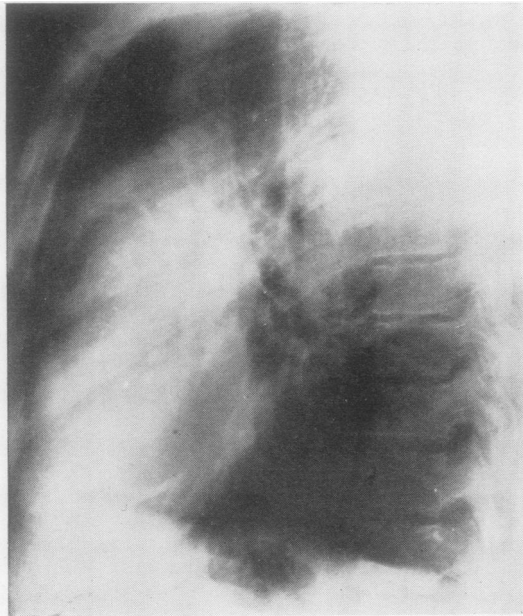


FIG. 2.—Left lateral radiograph of the chest showing the tumour in the anterior mediastinum.

COMMENT

A haemangioma is a tissue malformation of developmental origin and as such is an example of a hamartoma (Albrecht, 1904). It is not, strictly speaking, a neoplasm and is on the whole a benign condition. A simple tumour can, however, menace the health of the patient by pressure on vital structures, and in the case of a highly vascular tumour may cause severe haemorrhage. A cavernous haemangioma is composed of large blood spaces and is most frequently found in the skin or in the liver. From the skin the subcutaneous tissue and underlying muscle may be involved (Willis, 1948). The mediastinum is an uncommon site for haemangioma, the first case being reported as recently as 1944, and since then 18 other patients have been found with this condition. One previous case occurred in this country, a boy, 8 years of age, with a large mass occupying much of the left hemithorax. The boy died some hours after bronchoscopy, and at post-mortem examination a benign haemangioma was found encircling the large veins of the upper mediastinum and causing collapse of the upper lobe of the left lung (Emery and Doxiadis, 1953).

The most common situation of the vascular mass is the anterior mediastinum, three only having been reported lying posteriorly. In spite of the benign nature of the condition local areas of invasion have

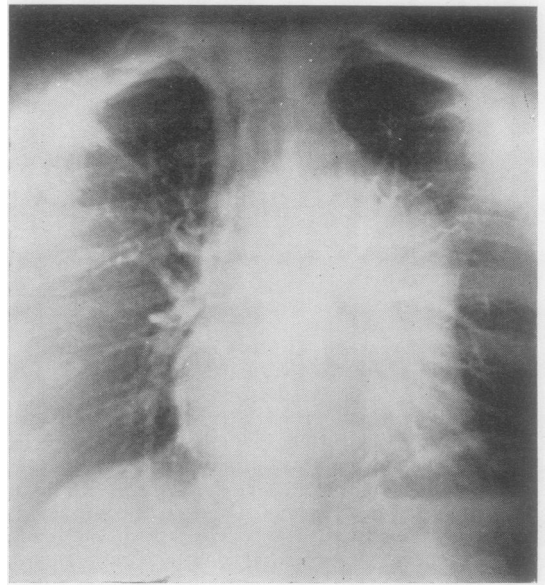


FIG. 3.—Pulmonary angiogram taken three seconds after intravenous injection of 50 ml. 70% "diodone."

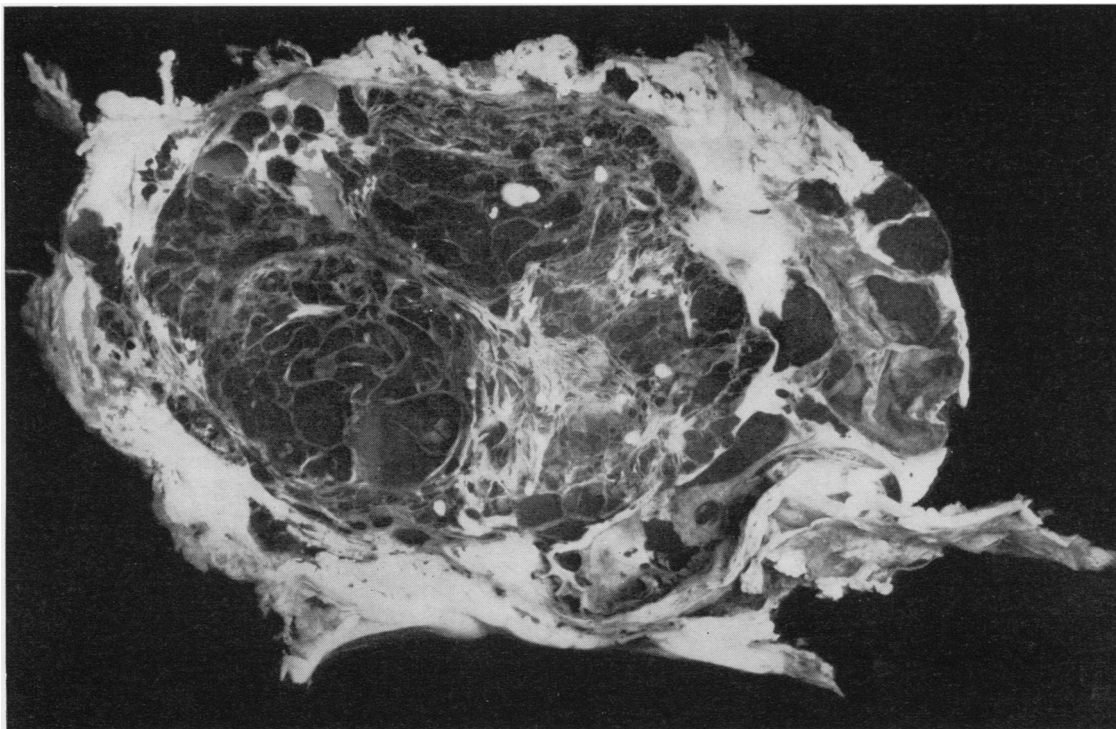


FIG. 4.—Photograph of longitudinal section of the specimen (actual size).

been noted. Certainly unusual fixation for a simple tumour was seen in this case. At the arch of the aorta the mass was most adherent, and this may have been due to the lack of a true capsule. Also seen at operation in these patients is the envelopment of mediastinal structures, blood vessels and nerves, within the vascular mass. These two characteristics of mediastinal haemangiomas account for three cases (Gross, 1953; Keegan, 1953; Schorr, Braun, and Isaac, 1954), where thoracotomy only was performed and followed by radiotherapy.

The question arises, Can these tumours be diagnosed pre-operatively? Symptoms are not always present and a proportion of the recorded cases has been discovered on routine chest radiography. The radiological appearances may give some clue to the diagnosis. Schorr and others (1954) have stressed the importance of phleboliths seen in the substance of the tumour. The lateral tomographs in our case showed these, and their presence was confirmed on examination of the specimen.

Angiography has been used on several occasions in the investigation of this condition. It shows that the tumour is not supplied by the pulmonary

vessels and helps to exclude post-stenotic dilatation of the pulmonary artery. Otherwise radiology is not of much assistance in the differential diagnosis of haemangiomas from other tumours of the anterior mediastinum, such as dermoid cysts and thymic tumours.

Thoracotomy is necessary to identify the true nature of the mediastinal mass and to carry out excision which may be difficult on account of adherence and envelopment of important structures. The fact that a number of these tumours have been discovered in infants and children and that those in adults were often discovered on the first routine radiograph implies that the tumour shares with haemangiomas of other sites the characteristic that they are present at birth.

This case provided an interesting problem in diagnosis, and with the increase in the use of mass radiography it is thought that more of these tumours may be discovered. It is surprising, however, that there are no reports in the literature of similar cases diagnosed at routine post-mortem examinations. Although rare, cavernous haemangioma should be considered in the differential diagnosis of mediastinal tumours.

SUMMARY

A case of benign cavernous haemangioma of the mediastinum is reported. The tumour was removed surgically.

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REFERENCES

- Adams, W. E., and Bloch, R. G. (1944). *Arch. Surg. (Chicago)*, **48**, 126.
- Albrecht, P. (1904). *Verh. dtsh. path. Ges.*, **7**, 153.
- Ellis, F. H., Kirklin, J. W., and Woolner, L. B. (1955). *J. thorac. Surg.*, **30**, 181.
- Emery, J. L., and Doxiadis, S. A. (1953). *Brit. J. Surg.*, **40**, 514.
- Gross, R. E. (1953). *The Surgery of Infancy and Childhood*, p. 779. Saunders, Philadelphia.
- Keegan, J. M. (1953). *Amer. J. Roentgenol.*, **69**, 66.
- Schlumberger, H. G. (1951). *Atlas of Tumor Pathology*, Section V, Fasc. 18; *Tumors of the Mediastinum*, pp. 41, 43, 68, 69. Armed Forces Institute of Pathology, Washington, D.C.
- Schorr, S., Braun, K., and Isaac, G. (1954). *Brit. J. Radiol.*, n.s. **27**, 305.
- Seybold, W. D., McDonald, J. R., Clagett, O. T., and Harrington, S. W. (1949). *J. thorac. Surg.*, **18**, 503.
- Willis, R. A. (1948). *Pathology of Tumours*, p. 700. Butterworth, London.