

INTRA-THORACIC LIPOMATA

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[For Plates see pages 148-150]

Lipoma within the thorax is extremely rare, and a review of the literature shows that only 39 cases have hitherto been described. In view of the rarity of this condition and of the difficulty in diagnosis, a further case is reported.

REVIEW OF THE LITERATURE

Fothergill (1783) recorded the first case. Heuer (1933) wrote a comprehensive article on this condition, and McCorkle and others (1940) reviewed the literature, adding another example. These authors classified intra-thoracic lipomata according to their anatomical position. They described three types:

- (1) lipomata which lie entirely within the thoracic cage;
- (2) dumb-bell lipomata, with a portion of the tumour lying inside the thorax and extending through an intercostal space to a portion outside the thoracic cage;
- (3) mediastinal lipomata, extending into the root of the neck.

The present case is of type 1, a completely intra-thoracic lipoma, situated in the anterior mediastinum and extending extra-pleurally on both sides.

Of the reported examples, 23 were completely within the thoracic cavity (type 1), 9 were dumb-bell tumours (type 2), and 7 occurred in the anterior mediastinum, presenting at the root of the neck (type 3). Of the 23 lipomata of type 1, 14 occurred in the male and 8 in the female. In one case the sex is not mentioned. The oldest patient was 65, the youngest 4 years of age. Eight of the lipomata were on the right side, 8 on the left, 4 in the anterior mediastinum, and 1 in the posterior mediastinum. In 2 patients the situation was not reported. Nine cases in this group were treated by operation, but none before 1918. Of these, 6 recovered, but in 3 the tumour recurred, the patients dying as a result of a second operation. In 15 instances the tumour was undiagnosed until autopsy. The largest weighed 8 kg. (17½ lb.) and was described by Leopold (1920), the patient dying of mediastinal obstruction. The second largest was described by McCorkle and others (1940) and weighed 7.3 kg. (16 lb.), the patient also dying without operation.

Nine dumb-bell lipomata (type 2) are reported, the earliest being by Cruveilhier (1856). Four were in males, 2 in females, and in 3 patients the sex is not mentioned. The oldest was aged 56 years, the youngest 1 year. Four of the tumours were on the left side, 3 on the right, 1 extended through the sternum, and 1 was

centrally situated, presenting over the sternum with prolongations at the lateral border penetrating the thoracic wall. All 9 patients were operated upon. Four died, 5 recovered. The first 4 cases were operated upon before 1890, and only the external portion of the tumour was removed. In 3 of these cases necropsy showed that death was due to suppurative anterior mediastinitis, purulent pleurisy, or pericarditis. The largest lipoma of this type removed weighed 500 g. (1.1 lb.).

Seven cases of anterior mediastinal lipomata presenting in the neck (type 3) are reported, the earliest being by Beatson (1899). Four were in males, 2 in females, and in 1 the sex is not stated. The oldest patient was aged 50, the youngest 6 years. All the lipomata arose centrally, but extended to the right side in 3 cases and to the left in 1. Six cases were operated upon. Five recovered and one died. Necropsy in 2 cases confirmed the presence of a mediastinal lipoma. The largest reported lipoma in this group weighed 3.1 kg. (6.8 lb.).

CASE REPORT

A dock labourer, aged 52 years, came to the London Chest Hospital on Sept. 20, 1945, complaining of cough and breathlessness.

History of present condition.—He had been quite well until two years previously, when he developed a cough with a small amount of thick sputum, and noticed that he was slightly breathless on exertion. He was treated at that time for bronchitis, but his symptoms gradually increased. Six weeks before being seen he became so breathless that he was unable to work, and during this time had to sleep with three pillows. The ankles did not swell, there was no haemoptysis, the weight was steady, and there was no pain in the chest and no night sweats.

Past history.—He had always been healthy and had never had any severe illness.

Examination.—His general condition was good. He was not breathless while lying in bed, but became so on the least exertion. There was no cyanosis, the mucous membranes were a good colour, there was no clubbing of the fingers, no enlarged veins in the neck, and no abnormal physical signs were found apart from the chest.

On inspection the chest was not grossly abnormal, but it expanded poorly and was held in the inspiratory position. On palpation, the trachea was centrally situated, the apex beat could not be felt. On percussion there was absolute dullness anteriorly over the lower half of the chest, extending to the anterior axillary line on both sides. On auscultation the breath sounds could be heard at the apices and the upper halves of the chest on both sides; these were vesicular in character, but there were rhonchi and sibili throughout both lungs. The breath sounds could not be heard over the dull area. Posteriorly the chest was resonant, the breath sounds vesicular and equal on both sides, with rhonchi and sibili, but no other added sounds could be detected. The heart sounds were very distant but normal. The pulse was normal and the blood pressure 136/80 mm. Hg. The radial pulses were equal. No other abnormal physical signs were found clinically.

Radiographic examination.—The postero-anterior radiograph (Plate XA) of the chest showed a large opacity in the middle of the chest, extending from the level of the second rib anteriorly on the right side and of the third rib anteriorly on the left side to the diaphragm, and from the axillary chest wall on the right almost to the axillary chest wall on the left side, but both costo-phrenic angles were clear. The borders of the shadow were well defined, but the rib markings and the lung tissue could be seen through the shadow

peripherally. Although the outline of the heart could not be differentiated with accuracy, the left border at the apex could just be detected, showing that the heart was not enlarged.

The left lateral radiograph (Plate Xb) showed a large opacity situated anteriorly, extending from the lower border of the manubrium sterni to the diaphragm, with a convexly curved posterior margin, occupying the whole of the front half of the chest. The heart could not be seen on the lateral view, but the arch of the aorta and descending aorta were clearly seen.

Fluoroscopy did not help very much, and a barium swallow showed that the oesophagus was pushed back.

The sputum was muco-purulent. No tubercle bacilli were found and no neoplastic cells identified. The Gram-stained film showed a large number of *H. influenzae* and pneumococci, and a small number of *M. catarrhalis*. The Kahn test was negative.

The blood count showed: erythrocytes 6,100,000 per c.mm. of blood, haemoglobin 106 per cent; leucocytes 18,000 per c.mm.; polymorph neutrophils 71 per cent; lymphocytes 29 per cent; no abnormal cells were seen.

The electrocardiogram showed a normal lead 1, a slight depression of the RT segment in lead 2, with an inverted T wave in lead 3, but otherwise no abnormality.

The dull area was then explored with a wide-bore needle in the fourth space 2½ in. from the sternum on the right side. The resistance to the exploring needle was that of a semi-solid substance. No fluid was found, but a small amount of material was withdrawn. Histological examination showed that this material consisted of a few small fragments of alveolar tissue containing capillaries; there was no evidence of malignant disease or of tubercle bacilli.

The nature of the tumour was, at this stage, undetermined. The clinical features suggested an innocent tumour, although its size and position did not correspond with those of any of the usual non-malignant intra-thoracic tumours. This, together with the result of the aspiration biopsy, suggested the possibility of a lipoma. Accordingly, operation was undertaken.

Operation (Nov. 11, 1945).—The anaesthetic was administered by Miss A. C. Rose. After preliminary cocaineization, bronchoscopy revealed that the trachea was somewhat narrowed from side to side and displaced backwards. After removal of the bronchoscope an endotracheal tube was passed, and anaesthesia was induced with pentothal, and maintained by nitrous oxide, oxygen, and cyclopropane.

The patient was placed in the left lateral position, so that the tumour could be approached from the right side. An incision was made along the line of the seventh rib, extending from its angle almost to the cartilage, and this rib was resected. The thorax was opened through the bed of the rib. The tumour was encountered immediately under the anterior part of the incision and was identified as a lipoma. The pleural cavity was opened, but it was found that the lung was adherent to the chest wall over its upper two-thirds so that only a basal pleural pocket was free. In order to obtain adequate exposure and a large enough outlet through which to deliver the tumour, a further incision was made at right angles to the main one, extending from the anterior axillary line towards the nipple. Half-inch segments of the fourth, fifth, and sixth ribs were resected and their intercostal bundles were divided. This procedure provided excellent access. The mass was found to be lying in the anterior mediastinum enveloping the anterior three-quarters of the heart with a prolongation upwards enveloping the great vessels and trachea. A leash of large vessels coursed over the tumour from its upper aspect. These vessels were divided between ligatures at the apex of the tumour, and thereafter it was a simple matter to separate the mass and to deliver it from the wound. The left pleural cavity was not opened. The lungs were then inflated by the anaesthetist and the chest wound was closed in layers, the sixth and eighth ribs being approximated with pericostal sutures.

Two pints of blood were transfused during the course of the operation. The patient's condition remained good throughout; a great improvement in his respiration was noticed when the mass was removed from the chest. Up to this point the anaesthetist had experienced some difficulty in keeping him well oxygenated.

Post-operative course.—The patient had no serious complications. Before operation he suffered from chronic bronchitis and expectorated 60 ml. (2 oz.) of sputum a day; after operation his cough became worse for a few days, with increased sputum. On the fifth day, during an attack of coughing, several ounces of serous fluid discharged from the wound; but the discharge did not continue and no aspiration of the pleural cavity was required.

The tumour (Plate XI) was macroscopically a lipoma, and section confirmed this.

Pathological report (Dr. S. Roodhouse Gloyne).—"The specimen is a pinkish-white lobulated solid tumour roughly resembling a large liver in shape. About the mid-point, on its lower border, is a notch about $2\frac{1}{2}$ in. deep, and in the corresponding position on its upper border is a solid pedicle to which is attached a small accessory tumour identical in colour and consistency with the main one. A large fan-shaped leash of vessels held together with loose strands of capsule covers the right side of the anterior surface of the tumour. These vessels have been ligatured. The weight of the main and accessory tumour together is 2,920 g. The measurements of the main tumour are: vertical 9 in., horizontal 11 in., antero-posterior 4 to $4\frac{1}{2}$ in.; and of the accessory tumour: vertical 2 in., horizontal $2\frac{1}{2}$ in., antero-posterior 1 to $1\frac{1}{2}$ in. Histologically the tumour is a typical lipoma. There is no evidence of malignancy."

Plate XIIA and B shows the radiographic appearance on Dec. 19, 1945, thirty-eight days after operation. The patient was discharged from hospital on Dec. 22, 1945, symptom free, returning to light work in January, 1946, and to full work as a dock labourer in April, 1946. He was last seen at hospital in January, 1947, and had remained well.

DISCUSSION

The diagnosis of a lipoma is usually very difficult when it is situated entirely within the thoracic cage. When part of the tumour projects outside the bony thorax and can be palpated either on the chest wall or at the root of the neck, the diagnosis is seldom in doubt. This swelling has the soft consistence of a lipoma, with a transmitted impulse on coughing, and it transilluminates fairly well, and may be lobulated.

The common symptom of an entirely intra-thoracic lipoma is progressive dyspnoea, which was the presenting symptom in the reported case. Many other symptoms have been described, such as cough, hoarseness, cyanosis, and oedema of the extremities; and in a few instances the tumour has been found at autopsy, without previous symptoms.

The physical signs often suggest effusion, that is, dullness on percussion, absence of breath sounds, with mediastinal displacement away from the lesion. Radiologically, the shadow is that of a circumscribed tumour rather than the crescent-shaped curve of a pleural effusion. In our patient, as the tumour was anteriorly situated and enveloping the heart, the signs suggested a pericardial effusion—this impression being strengthened by the postero-anterior radiograph, but the lateral view showed that the heart shadow was not enlarged posteriorly.

On the other hand, the heart shadow could not be identified separately with any certainty. Furthermore, aspiration with a large-bore needle produced nothing but fatty tissue, which we regarded as an important finding. Lobulation is a distinctive sign of lipoma in general. Thoracic lipomata are no exception, and this sign may be shown radiologically. In our case the lobulation was evident at its upper extremity.

Radiologically, lipomata may be situated in any part of the chest, but in fact they are all extra-pleural arising from the extra-pleural fat. The presence of a large tumour of this sort, which from the history seems to be not malignant, and which is not characteristic of any of the commoner non-malignant tumours, suggests the possibility of a lipoma.

The difficulty in diagnosing this case arose largely because we had never encountered a similar condition, and although a lipoma was suspected, the diagnosis was in doubt until operation.

Technically the operation presented no particular difficulty once adequate exposure had been obtained. Watson and Urban (1944) reported the successful removal of an intra-thoracic lipoma weighing 3,100 g., and stated that, of the 12 lipomata successfully excised up to that date, none had exceeded 500 g. This record tumour was removed piecemeal. In our patient the tumour weighed 2,920 g. and was removed intact.

SUMMARY

A case of intra-thoracic lipoma in a man of 52 is described. The tumour weighed 2,920 g. and was removed successfully. The relevant literature is reviewed.

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