mine results in a decrease in pyruvate utilization. One current hypothesis is that because of an inability to utilize pyruvate an intermediate vasodilator material accumulates, resulting in AV shunting and high output failure and subsequent cardiovascular collapse. It is possible that transketolase activity, a measure of thiamine activity, is inhibited by metabolic conditions other than thiamine pyrophosphate deficiency such as metabolic acidosis. Experimental observations have shown that early treatment of thiamine deficiency completely restores the normal transketolase thiamine pyrophosphate enzyme system as opposed to delayed treatment which usually results in only partial resolution. This may help explain the rapid clinical improvement in this patient when both thiamine deficiency and metabolic acidosis were simultaneously corrected.

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Heterotopic Bone Marrow (Myelolipoma) of the Mediastinum*

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Chest x-ray films and autopsy showed a 5 cm myelolipoma in the mediastinum of a 71-year-old woman. This unusual benign tumor is composed of bone marrow cells, usually occurs in the adrenal glands, and is unrelated to anemia or systemic diseases.

Small tumor-like masses of bone marrow and fat "myelolipomas" occasionally appear in the adrenals. These unexplained nodules usually are discovered by pathologists incidentally at autopsy and are regarded as curiosities. No other cases have been detected by clinical or radiographic methods, as far as we can find in available literature. With rare exceptions, myelolipomas have occurred only in the adrenals. These exceptions include one case in the thorax1 and several in the renal pelvis, ovary and pelvic space. In most reported cases, the patients have had no important disorder of the blood or general bone marrow. In this paper we describe a patient with a 5 cm myelolipoma situated in the anterior mediastinum, which was visible on x-ray films of the chest. The mass seemed to be unrelated to the illness and death of the patient, a 71-year-old woman, who died of renal papillary necrosis and staphylococcal meningitis.

CASE REPORT

This 71-year-old semi-comatose Caucasian woman had been living alone and was brought to the hospital, unable to give a history. On physical examination she resisted movements, and her neck was stiff. Her temperature was normal; blood pressure was 100/72 mm Hg. Auscultation and percussion of lungs elicited normal resonance and breath sounds. The white blood cell count was 15,000 with 23 percent band forms. The cerebrospinal fluid contained 330 leukocytes/mm³, and cultures of fluid grew Staphylococcus aureus. The blood sugar was 200 mg per 100 cm³ (normal 65 to 95). Chest X-ray films: Anteroposterior and lateral projections of the chest showed a mass of soft tissue density 6 x 5.5 x 5.5 cm arising from the right anterior-superior mediastinum. There was a calcified Ghon complex at the left base and hilum (Fig 1 and 2). Urine contained numerous leukocytes and grew Staphylococcus aureus. The meningitis improved clinically, but she remained anuric and died five days after admission.

Autopsy. In the right anterior mediastinum protruding into the right upper lobe was a rounded, nodular, relatively discrete, encapsulated mass 5 cm in greatest diameter. The cut surfaces were firm, finely granular, and yellow to deep red. The microscopic sections showed intermixed mature bone marrow elements and fat. The bone marrow in the

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HETEROTOPIC BONE MARROW OF MEDIASTINUM

Figures 1 (left) and 2 (right). Anterioposterior and lateral projections of the chest show a mass of soft tissue density 8 x 5.5 x 5.5 cm arising from the right anterior-superior mediastinum. There is a calcified Ghon complex at the left base and hilum.

Bones elsewhere was relatively normal. Other findings at autopsy included papillary necrosis of both kidneys with abscesses and foci of bacteria, normal adrenals, Laennec’s cirrhosis of the liver, mild jaundice and esophageal varices. The diaphragma sella was absent, and the sella turcica was dilated (“empty sella” syndrome3). The pituitary was hollowed out in a cup-shaped distortion, but its microscopic composition was normal. The sinuses contained a small amount of pale, thin fluid.

Bacteria may have invaded through the paper-thin partition between the ethmoid sinus and dilated pituitary fossa to cause meningitis.

DISCUSSION

Arnold (1886), quoted by Giffen4, first described these tumors. Oberling5 reviewed several cases and suggested some theories of origin. Collins6 surveyed the literature up to 1932 and collected 15 reported cases, adding a case of his own. The most modern review of myelolipomas, which included history, European publications and possible mechanism of origin, was made by Giffen7 in 1946. He described seven cases, all in unilateral adrenals, ranging from 7 mm to 3 cm. The youngest patient ever reported8 was 32. Most were elderly. All of the reported myelolipomas resembled each other, being composed of intermixed fat and mature marrow elements, including normoblastic, granulocytic and megakaryocytic series.7

The only previous report of a myelolipoma in the chest was made by Saleeby1 in 1925. An elderly woman who died of cerebral infarction was found at autopsy to have a similar 2.5 cm nodule in each posterior thoracic cavity connected by fibrous tissue to the posterior fifth ribs.

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