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GIANT-CELL TUMOUR OF THORACIC VERTEBRA

Case Report

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True giant-cell tumours of bone in subjects of considerable age are rare, and in bones other than long bones very rare. The terminology in the literature concerning giant-cell tumours of vertebrae is sometimes confusing when no distinction is made between true giant-cell tumours on the one hand and aneurysmal bone cysts and benign osteoblastomas (Jaffe) on the other. It is important to distinguish between these three conditions as they have a different behavior in the long run, as has been pointed out in a recent report by *Cohen et al.* (3). The rarity of true giant-cell tumours of the vertebral column, especially above the sacrum has been pointed out in several publications (3–10). We now report and discuss a case in a woman of 67 years.

CASE REPORT

The patient was a woman aged 67 years, the inmate of a mental hospital owing to depression and paranoid delusions. She had not previously had any somatic illness of note. At the age of 66 years she started to complain of weakness and pain of the back. X-ray examination revealed compression of the 8th thoracic vertebra to half its normal height. The adjacent disks appeared intact. X-ray examination 6 years earlier had shown a normal thoracic spine. About 6 months after the appearance of symptoms she suddenly developed total paralysis of both legs and extreme muscular weakness of the lower trunk. Pain sensibility was diminished up to a level 4 inches above the umbilicus. The patellar and achilles reflexes were increased and Babinski's response was positive on both sides. Serum values of calcium, phosphate and alkalin phosphatases were within normal limits. At operation a fairly soft, "liverlike" tumour was found in the body and arches of the diseased thoracic vertebra.

The patient developed left pneumothorax with respiratory distress, and wound infection. She deteriorated, bronchopneumonia followed, and she died 3 weeks after operation.

Figure 1. X-ray picture of the compressed eighth thoracic vertebra.

At necropsy the eighth thoracic vertebra was found to be destroyed and compressed, with remnants of soft, "liverlike" tumour tissue. No other skeletal changes could be detected. Four parathyroids were found. They were not enlarged and histologically normal. There were left-sided pneumothorax, total atelactasis of the left lung, and bronchopneumonia.

THE TUMOUR

The X-ray appearance before operation is seen in Figure 1. Macroscopically the remnants of the tumour had a liverlike, reddish cut surface. The tumour had not penetrated into adjacent soft tissues.

Microscopically there was proliferation of oval- to spindle-shaped cells with rounded or slightly elongated, palish nuclei in a highly vascular stroma (Figure 2) with a large number of multinucleated giant-

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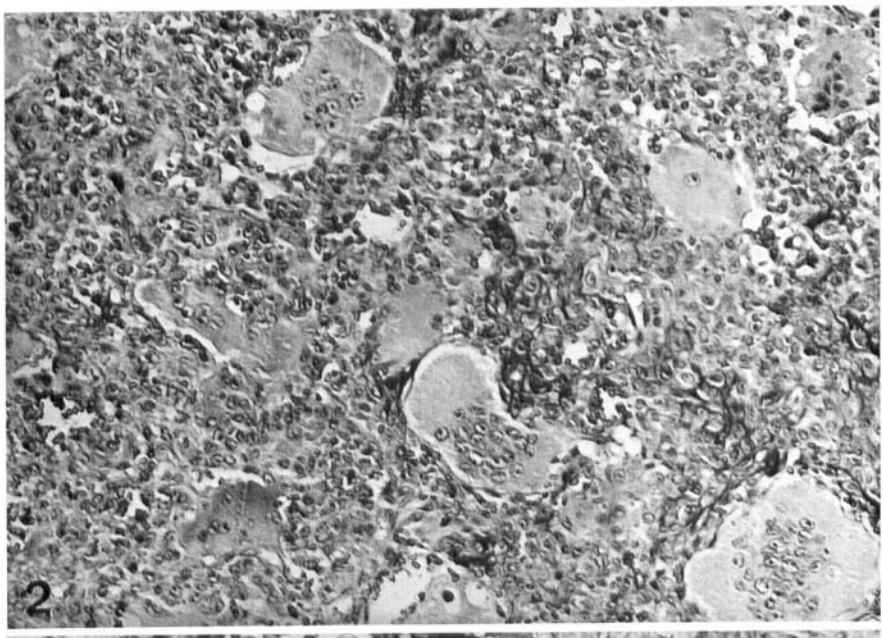
Figure 2. Diagnostic area from the lateral part of the tumour with characteristic picture with vascular stroma, proliferation of oval to spindle-shaped cells and several giant-cells with nuclei similar to those of the spindle cells. van Gieson × 130.

Figure 3. Osteoid tissue in peripheral area of the tumour. Note giant-cells attached to endothelial lining. Van Gieson × 125.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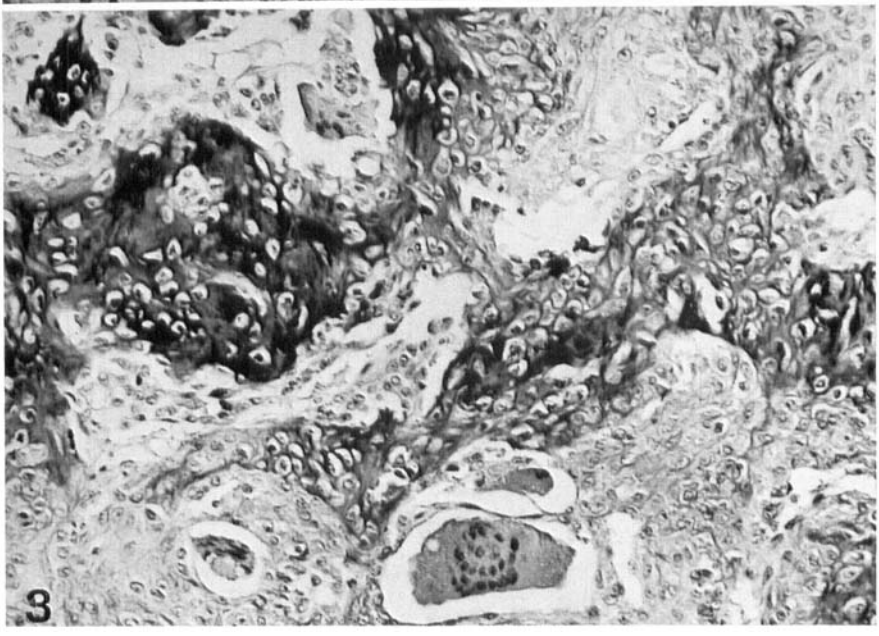
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cells throughout the stroma. In the periphery of the tumour there was collagenization and osteoid formation (Figure 3). There were occasional mitoses. The giant-cells with centrally situated nuclei were fairly often situated within the capillary lumina and sometimes they seemed to be attached to the endothelial lining (Figure 3).

DISCUSSION

Although the histological picture of a true giant-cell tumour is said to be characteristic, several authors (3, 4, 11, 12) maintain that the findings may occasionally be similar in other bone diseases.

Except giant-cell tumours, aneurysmal bone cysts and benign osteoblastoma there are a large number of unrelated lesions of bone that contain multinucleated giant-cells. Such lesions are brown tumour of hyperparathyroidism, osteogenic sarcoma, inflammatory or non-specific degenerative processes, chondroblastoma, non-osteogenic fibroma and histiocytosis X.

As has been stressed by *Dahlin et al.* (13) the problem of accurate diagnosis is simplified if one disregards the giant-cells and instead observes the stromal pattern and the proliferating cells in the best preserved portions of the tumour.

The problem in the present case is to identify the tumour as a true giant-cell tumour, distinguishable from aneurysmal bone cyst and benign osteoblastoma—and from the so-called brown tumour of hyperparathyroidism. The other of the above mentioned lesions do not have much in common with the present case, except multinucleated giant-cells.

The roentgenological picture is relatively unspecific and is of little help from the point of view of differential diagnosis. The secondary compression of the vertebra has undoubtedly also changed greatly the original appearance of the lesion. The picture could fit in with a malignant process of primary or secondary nature, and also with most of the diagnoses mentioned above.

The brown tumour of hyperparathyroidism can histologically be difficult to differentiate from giant-cell tumour, but in hyperparathyroidism the determination of blood calcium is much more important than histological examination. All relevant values were normal in this case which with a considerable degree of certainty excludes hyperparathyroidism.

The aneurysmal bone cyst (1) is a benign, fibrocystic tumour of

bone made up of dilated, blood-filled spaces. These blood-filled spaces very often lack a true endothelial lining. Giant-cells are present in varying numbers. In contrast to the well preserved, diagnostic portions of true giant-cell tumours there are in aneurysmal bone cysts varying amounts of intercellular collagen and osteoid trabeculae in the cellular parts of the cysts. In the present case there were no blood-filled spaces and collagenization and osteoid formation were noted only in the peripheral parts of the tumour. It is probable that the osteoid reaction is, at least in part, a sequel of the compression fracture (Figures 1 and 3).

The benign osteoblastoma (Synonyms: giant osteoid osteoma (2) and osteogenic fibroma) is a benign primary bone tumour composed of varying amounts of trabeculae of more or less calcified osteoid in a well-vascularized, osteoblastic connective tissue stroma. The histological features of this tumour vary markedly even within a single lesion. However all these tumours are characterized by active osteoid formation in a loose, highly vascular stroma, which is rich in osteoblasts. Furthermore highly cellular areas of spindle cells in interlacing bundles are uncommon histological features of benign osteoblastoma. Giant-cells are not a necessary feature of the tumour. As has been underlined above there were small areas of osteoid formation only in the peripheral parts of the present lesion. The stromal pattern was characterized by vascularity. Proliferation of oval- to spindleshaped cells was marked in the diagnostic portions of the tumour (Figures 2 and 3).

Mainly on macro- and microscopical findings we have thus settled on the diagnosis of true giant-cell tumour. There is also a statistical support to the assumption that the present lesion is a true giant-cell tumour. To the best of our knowledge no convincing case of aneurysmal bone cyst or benign osteoblastoma has been reported in persons more than 35 years old, whereas true giant-cell tumours are evenly distributed through the ages after the age of 20 years.

SUMMARY

The case is reported of a 67-year-old woman with tumour of a thoracic vertebra, with compression fracture. The tumour is classified on histological grounds as a true giant-cell tumour. The differential diagnosis is discussed.

RESUME

Il est rapporté le cas d'une femme âgée de 67 ans ayant une tumeur d'une vertèbre thoracique avec fracture de compression. La tumeur est classifiée sur la base des données histologiques comme une véritable tumeur de cellules géantes. Discussion du diagnostic différentiel.

ZUSAMMENFASSUNG

Der fall eines 67 jährigen weiblichen Patients mit einem Tumor eines Brustwirbels und Kompressionsbruch wird berichtet. Histologisch wird der Tumor als ein echter Riesenzellentumor bezeichnet. Die Differentialdiagnose wird besprochen.

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