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Case Report

Mixed sex-cord stromal tumour of the testis

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Sex-cord stromal tumours account for only about 6% of testicular neoplasms.[1] Leydig cell tumour is the commonest sub-type but other tissues that can be represented in varying amounts and degrees of differentiation include Sertoli, granulosa and theca-lutein elements. Testicular granulosa-cell tumour of the adult type is particularly uncommon. This report details a mixed sex-cord stromal tumour of the testis in which the adult granulosa cell component predominates.

CASE REPORT A 54 year-old male presented with a four week history of a painful, right sided testicular swelling. He was otherwise well and symptom free. Physical examination revealed a small swelling in the lower pole of the right testis which was hard in consistency. There were no other findings. The clinical impression was that of a testicular tumour. An ultrasound scan of the scrotum was performed. This revealed a 2-cm diameter, low echogenic mass in the lower pole of the right testis. Several small cystic areas were noted within the mass. Tumour markers were all within the normal range (alpha-fetoprotein <4 kU/1, HCG <2 U/L, CEA 5 ug/1). Orchidectomy was performed. CT scanning of his chest, abdomen and pelvis showed no evidence of metastatic disease. Post operatively the patient remained well and symptom-free. At his most recent review, 28 months after initial presentation the patient was well and had no symptoms. Tumour markers have remained within the normal range and a CT scan of the chest, abdomen and pelvis has again shown no evidence of metastatic disease.

PATHOLOGICAL FINDINGS

The 5 x 4.5 x 3 cm testis, its coverings and the 11 cm of spermatic cord had a total weight of 80 grams. The lower pole of the testis contained a 2 x 1.7 x 1.6 cm circumscribed, pale, rubbery tumour with central areas of cystic change and haemorrhage, abutting on to the adjacent tunica (Fig 1A). Histology showed a mixed sex-cord stromal tumour of the testis with a circumscribed, lobulated margin compressing the inner aspect of the tunica and adjacent testicular parenchyma

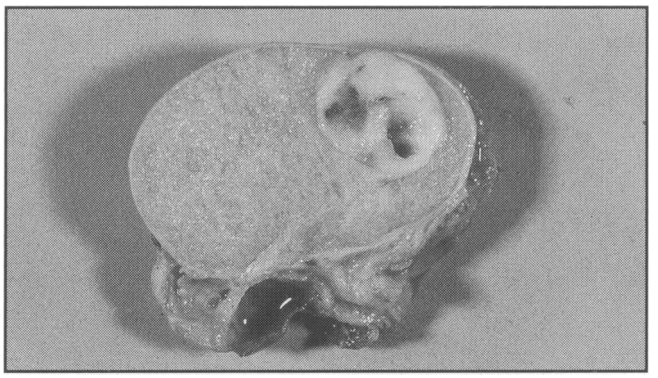

Fig 1(a). A well circumscribed lower pole testicular tumour, pale in colour with focal areas of cystic degeneration and haemorrhage.

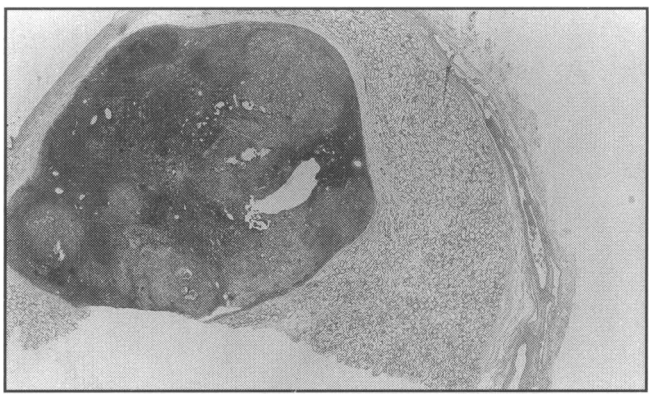

Fig 1 (b). The tumour is compressing the adjacent tunica and testicular parenchyma.

(Fig 1B). The differentiation was predominantly that of an adult type granulosa cell tumour with minor (< 5%) Sertoli cell tubular elements. In keeping with a granulosa cell lesion the periphery of the tumour had a poorly differentiated fascicular and storiform spindle cell pattern (Fig 2A) but centrally a well to moderately differentiated insular and trabecular arrangement with focal myxoid and microcystic change and stromal

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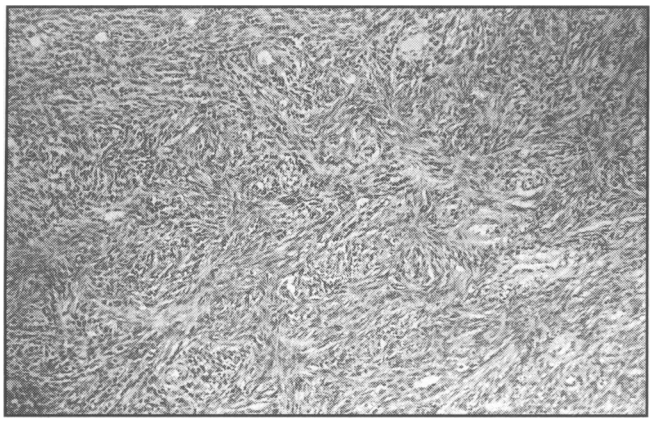

Fig 2(a). The periphery of the tumour showed a fascicular and storiform spindle cell arrangement.

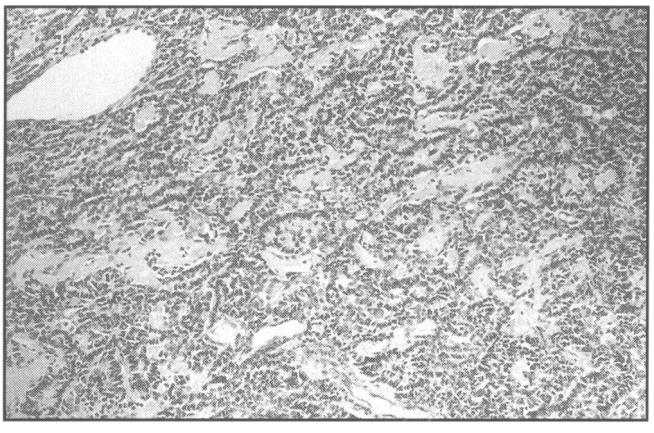

Fig 2 (b). Centrally the tumour showed a trabecular and insular arrangement of cells in a hyaline stroma.

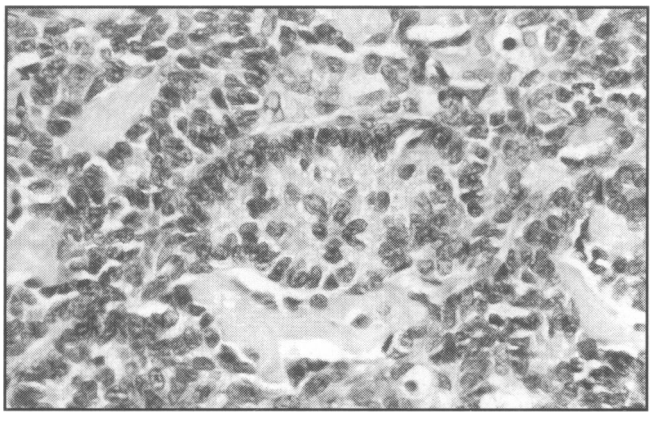

Fig 2(c). The tumour cells have irregular ovoid nuclei with longitudinal grooves.

hyalinisation (Fig 2B). The cells had an ovoid, vesicular nucleus in which longitudinal nuclear grooves were present and clear to light eosinophilic cytoplasm (Fig 2C). There was no significant necrosis, nuclear atypia or mitoses. Call-Exner bodies were not present. Immunoperoxidase on the paraffin sections showed strong positivity with vimentin antibody but negative results for CAM 5.2 and AE1/AE3 cytokeratins, placental alkaline phosphatase (PLAP) , MIC-2 oncogene product and oestrogen and progesterone receptors. Electron microscopy showed groups of cells within a loose collagenous matrix – there was a high nuclear cytoplasmic ratio and a degree of nuclear irregularity, the features being consistent with those of the granulosa-theca cell type. The adjacent testicular tubules were compressed but there was no evidence of germ cell neoplasia. There was no invasion of the tunica, rete, epididymis, spermatic cord or vessels.

DISCUSSION

Sex-cord stromal tumours of the testis are uncommon with a spectrum of differentiation including Sertoli-Leydig and the cagranulosa cell elements. There is debate as to whether they arise from the primitive stroma of the gonad or the mesothelium of the genital ridge.[1] Most testicular granulosa cell tumours occur in childhood or adolescence and are of the juvenile type. In 1952 Laskowski[2] described an adult type testicular granulosa cell tumour which is still regarded as a rare neoplasm.[3-5] They are well circumscribed tumours with a range of solid, microcystic, microfollicular, gyriform, insular, trabecular and spindle cell patterns in which Call-Exner bodies may be identified.[4,5] The nuclei are irregular with characteristic longitudinal grooves seen on both light and electron microscopy.[4] The cells are positive for vimentin intermediate filaments and negative for EMA and cytokeratins.[4,5] However, use of cryostat frozen sections has shown positivity for cytokeratins 8 and 18 but confirmed an absence of staining with antibodies to EMA, common leucocyte antigen and desmoplakin.[6] The mean age of presentation is 47 years and the patient may have noted testicular enlargement over several years.[5] Some lesions are endocrinologically active presenting with gynaecomastia[3,7] Interestingly a proportion of the cells can be positive for oestrogen and progesterone receptors although again there is a discrepancy in results between frozen and paraffin sections.[6] Düe *et al*[6] have postulated the detection of steroid hormone receptors as a possible basis for tumour development and therapeutic management by oestrogenic manipulation.

Most adult granulosa cell tumours appear to have been benign and this is corroborated by the low mitotic activity and small growth fraction on Ki-67 staining.[6] However, as with ovarian granulosa

cell tumours, biological behaviour cannot be accurately predicted from the histology although features worthy of comment are young age at presentation, extra-testicular hormonal effects, tumour size, pleomorphism, mitotic activity and local invasiveness. Matoska *et al*[7] reported a 26 year old male presenting with bilateral gynaecomastia, and metastases to retroperitoneal lymph nodes. The primary tumour showed 3-10 mitotic figures per ten high power fields and focal infiltration of the rete and lower part of the spermatic cord. Jimenez-Quintero *et al*[5] in their series of seven cases had one patient who presented with retroperitoneal lymph node secondaries and who developed inguinal lymph node secondaries one year later. Histology showed focal infiltration of the tunica in the primary tumour. Another patient developed retroperitoneal lymph node and liver secondaries 121 months after diagnosis and subsequently died 13 months later. Mitotic figures in their series ranged from 1-26 per 50 high power fields. They concluded that testicular adult granulosa cell tumour is a rare and slow-growing neoplasm with the potential to form distant metastases. Recurrence and metastases may occur late in the clinical course, emphasising the need for long-term follow-up in these patients. This emphasises Talerman's[3] view that testicular adult granulosa cell tumour is potentially of low-grade malignancy.

The minor Sertoli cell element in this case takes it from pure granulosa cell tumour into the mixed sex-cord stromal tumour category. However there are insufficient numbers of the latter reported in the literature to determine whether they follow any particular behaviour pattern and individual lesions are perhaps best assessed according to their predominant component of differentiation.

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REFERENCES

1. Mostofi F K, Price E B. Tumors of the male genital system. Atlas of Tumour Pathology 2nd Series, Fascicle 8. Washington DC. Armed Forces Institute of Pathology, 1973.
2. Laskowski J. Feminizing tumors of testis: general review with case report of granulosa cell tumor of testis. *Endokrynol Pol* 1952; **3**: 337-43.
3. Talerman A. Pure granulosa cell tumor of testis: report of a case and review of the literature. *Appl Pathol* 1985: **3**: 117-22.
4. Nistal M, Lázaro R, Garcia J, Paniagua R. Testicular granulosa cell tumor of the adult type. *Arch Pathol Lab Med* 1992; **116**: 284-7.
5. Jimenez-Quintero L P, Ro J Y, Zavala-Pompa A, Amin M B, Tetu B, Ordonez N G, Ayala A G. Granulosa cell tumor of the adult testis: a clinicopathologic study of seven cases and a review of the literature. *Hum Pathol* 1993; **24**: 1120-6.
6. Düe W, Dieckmann K-P, Niedobitek G, Bornhöft G, Loy V, Stein H. Testicular sex cord stromal tumour with granulosa cell differentiation: detection of steroid hormone receptors as a possible basis for tumour development and therapeutic management. *J Clin Pathol* 1990; **43**: 732-7.
7. Matoška J, Ondruš D, Talerman A. Malignant granulosa cell tumor of the testis associated with gynecomastia and long survival. *Cancer* 1992; **69**: 1769-72.