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MALIGNANT MURAL NODULE WITHIN AN OVARIAN MUCINOUS TUMOUR

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Abstract: *Mural nodules of the ovary are described as solid masses or nodules which are histologically different from the background cystic tumour. These nodules can be associated with both serous and mucinous ovarian tumours but more commonly with mucinous subtypes. These mural nodules could be benign or malignant. The subtypes include sarcoma-like, sarcomatoid, anaplastic and mixed. We describe a case of a borderline mucinous ovarian tumour with intraepithelial carcinoma with a mural nodule of anaplastic carcinoma.*

Case:

A middle aged nulliparous female presented with cramping abdominal pain and vomiting. There was past medical history of hypercholesterolemia, hypertension, melanoma and splenectomy for idiopathic thrombocytopenic purpura.

On examination, the abdomen was tender and distended with sluggish bowel sounds. CT scan of abdomen and pelvis showed a heterogenous right adenaxal mass with nodular, irregular contour and thickened internal septation, likely ovarian in origin.

The tumour markers were as follows: CA19.9 (>8470), CEA (471) and normal CA125.
The patient had normal upper GI endoscopy and colonoscopy.

She underwent total abdominal hysterectomy, bilateral salpingo-oophrectomy with omentectomy and appendicectomy.The peritoneal washings were sent for cytological analysis and came back as negative.

Pathological findings:

Gross features:

The right ovary was cystic, it measured 115x120x55mm and weighed 579g. The capsular surface of the ovary was smooth and shiny, without any disruption.

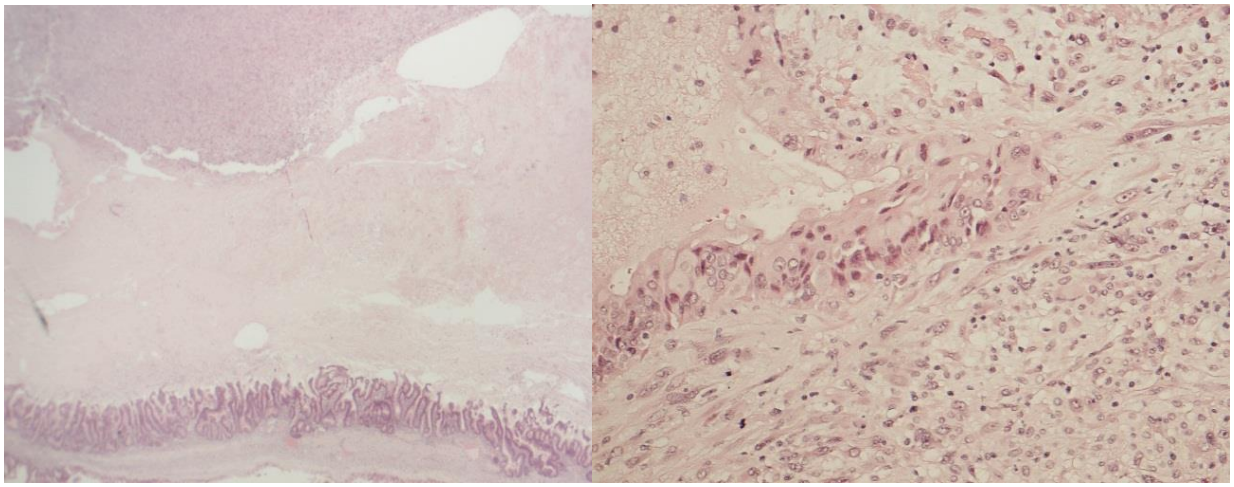
On sectioning, a multi-loculated cyst was found. The cyst was composed of an outer firm cyst capsule with a partially thickened cyst wall. It was filled with mucinous and greenish yellow secretions. There were no papillary projections. A nodule was also noted (70x60x60mm) was also noted, attached to the fibrous cyst wall in one area.

The right fallopian tube measured 95x6mm.The left Fallopian tube was within normal limits. The leftovary was congested and measured 27x16x6mm. The uterus showed a3x2mm endometrial polyp. The rest was grossly within normal limits.

Microscopic features:

The right ovary showed cysts lined by proliferating intestinal type epithelium of

borderline mucinous tumour with foci of intraepithelial carcinoma demonstrating marked nuclear atypia. A single cellular nodule was seen. There was sharp demarcation between that nodule and mucinous borderline tumour. The cellular nodule was composed of markedly atypical spindled and epithelioid cells with associated inflammation and patchy necrosis.



Immuno-histochemically, many of the cells within the cellular nodule were positive with the cytokeratins AE1/3. They were also focally positive with CK7 and 20. The features were those of a so-called malignant mural nodule within a mucinous borderline tumour of intestinal type. In our case, given the morphological appearances and the immuno-phenotype, the malignant mural nodule represented anaplastic carcinoma. The tumour cells were negative for desmin and CDX2.

The left ovary was unremarkable. The omentum, appendix, fallopian tubes and contralateral ovary did not show any evidence of malignancy. The uterus showed a benign endometrial polyp and mild cystic hyperplasia without any evidence of malignancy.

Discussion

Mural nodules are infrequent entities, associated more commonly with mucinous cysts of the ovary and occur very rarely with serous cystadenomas[2]. These nodules can be reactive or neoplastic. Amongst these, the neoplastic ones can be benign or malignant, where they can be carcinomatous, sarcomatoid or mixed[3].

Sarcoma like reactive mural nodules are usually multiple and occur in middle aged females. They have been seen in benign, borderline and malignant tumours. These nodules have mixed population of spindle shaped cells, osteoclast type giant cells and polygonal pleomorphic cells with increased mitotic activity and necrosis. These nodules show positive immuno-reactivity with vimentin especially in pleomorphic cells. The osteoclast type cells are positive for CD68. These nodules do not show immuno-reactivity with cytokeratins.

Sarcomatous nodules occur in old age. They can display various patterns including rhabdomyosarcoma, fibrosarcoma, carcinosarcoma or undifferentiated type. Vascular invasion is present. These tumours show variable immuno-reactivity with desmin and actin. Tumour cells are negative for cytokeratins.

Anaplastic nodules are usually seen with borderline and malignant mucinous tumours. These nodules are composed of highly pleomorphic epithelial cells with hyperchromatic nuclei admixed with spindle cells. The tumour cells are positive for cytokeratins and EMA. Anaplastic mural nodules can invade surrounding structures and are associated with vascular invasion. Presence of anaplastic mural nodules is not restricted to ovary and these nodules have also been reported within pancreas and gallbladder.

Multiple cases of these nodules have been reported in literature but the underlying pathogenesis is not clear. A case of sarcoma-like mural nodule was reported within a progressive borderline mucinous tumour producing GCSF (granulocyte colony stimulating factor)[4]. One case report suggested a mesothelial origin due to expression of similar markers (vimentin and cytokeratin)[5]. Another case of sarcoma like nodule with a focus of anaplastic carcinoma was reported where it was suggested that sarcoma-like nodules develop from undifferentiated mesenchymal cells underneath the mucinous epithelium as a result of reactive process like haemorrhage within the cyst wall[6].

Anaplastic and sarcomatous nodules should be distinguished from sarcoma like nodules as the latter has favourable prognosis[7].

It was also thought that these malignant nodules have poor prognosis with 50% mortality rate[8]. This was modified by further studies suggesting that this is not applicable in stage 1a tumours[6].

In our case, the specimen was extensively sampled and the sections showed a background of intestinal borderline mucinous tumour and in situ mucinous carcinoma with a clearly demarcated focus of spindled and epithelioid cells giving an impression of sarcomatoid carcinoma on H&E staining. Both in situ mucinous carcinoma and the focus of sarcomatoid carcinoma show immuno-reactivity for cytokeratins and negative for other markers. Both immuno-staining and morphology favoured an anaplastic mural nodule.

In our case, the tumour stage was FIGO 1a and completed excised. There was no evidence of metastasis histologically and on cytological analysis of peritoneal washings. The patient is being followed up with no history of recurrence.

In conclusion, our case report emphasized the importance of adequate sampling for a correct diagnosis and to help pick –up other small co-existing pathology such as a small mural nodule in this case. Also, it is important to differentiate amongst different types of mural nodules to avoid misdiagnosis and thereafter a proper staging helps guiding appropriate patient management and follow up.

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