Poorly differentiated hepatocellular carcinoma with unusual tubular structures

The patient was a 70 year old woman. A tumour in liver segment 8 arose in a background of cirrhotic liver with chronic hepatitis C and reached a size of 6.0 cm in six months. The patient’s serum concentration was raised (17101 ng/ml), and the tumour was suspected to be hepatocellular carcinoma (HCC) based on various image findings. An extended liver anterior segmentectomy was performed, and serum \( \alpha \)-fetoprotein returned to normal immediately after surgery.

Although the macroscopic findings were compatible with conventional HCC (fig 1A), the histology of the tumour was atypical—the tumour cells mainly formed irregular tubular structures filled with a bloody/serous or bloody fluid (fig 1B), and small tubular or acinar-like structures were also found (fig 1C). Solid structures were seen in a small portion of the tumour (fig 1D), and massive bleeding was also seen. The tumour cells had abundant eosinophilic granular cytoplasm and round nuclei with moderate variations in size and shape. The typical trabecular pattern was not seen, and no evidence of desmoplastic stroma, extracapsular proliferation, vascular invasion, or \( \alpha \)-fetoprotein were compatible with these types of tumours. The atypical trabecular pattern suggested a yolk sac tumour, and an association between hepatitis C virus infection and yolk sac tumours has been suggested. However, specific features such as Schiller-Duval bodies, a cystic pattern, and hyaline globules, were not detected. In addition, the tumour was immunohistochemically negative for \( 2A2, 2G10, \) and \( 4C4, \) which have been reported to be specific to yolk sac tumours. A strong reactivity for vimentin was associated with metastatic HCCs or sarcomatous HCCs, indicating a highly malignant form of HCC. Clinically, this tumour showed rapid growth and a high proliferative activity of 60% as assessed by the MIB-1 labelling index.

All candidate tumour types with the exception of HCC (cholangiocellular carcinoma, metatstatic adenocarcinoma, primary malignant mesotheliomas, carcinoid tumours, and germ cell tumours) were ruled out clinically and histologically. Pseudo-glandular formation is a common histological manifestation of HCC, and pseudo-tubular HCC shows large vascular lakes within the tumour, mimicking peliosis hepatitis. Therefore, we consider this tumour to resemble such types of HCC.

Recently, intermediate liver carcinomas and hepatic stem cell malignancies have been reported. However, an apparent stem cell component was not prominent in the present tumour, and the negativity for c-kit, the hypochromatic nuclei, and the absence of desmoplastic stroma were not compatible with these types of tumours. Therefore, we consider this tumour to resemble such types of HCC.

The patient gave informed consent for this letter to be published.

References

Metastasis of a caecal neuroendocrine carcinoma to the thyroid gland

Metastatic tumours to the thyroid have been reported to arise from several organs. We describe a unique case of caecal neuroendocrine carcinoma (NEC) metastatic to the thyroid gland, mimicking a primary medullary thyroid carcinoma (MTC).

A 56 year old woman was referred after complaining of dysphagia and hoarseness.
Five months before, she underwent surgery because of a well differentiated caecal NEC, low grade malignant, with metastases to the left ovary, the omentum, and the abdominal lymph nodes (World Health Organization classification). The tumour was composed of spindle shaped cells, exhibiting scanty eosinophilic cytoplasm, salt and pepper nuclei, and inconspicuous nucleoli (Fig. 1). Neoplastic cells showed intense reactivity with antibodies against CAM 5.2, AE1/AE3, cytokeratin 7, CDX-2, chromogranin A, synaptophysin, serotonin, and neurone specific enolase; there was weak reactivity for calcitonin and carcinoembryonic antigen. In contrast, no immunoreactivity was detected for thyroid transcription factor 1 or vimentin. On examination, a firm nodule was felt in the left lobe of the patient’s thyroid gland; attempts at fine needle aspiration biopsy did not yield adequate material for a cytological diagnosis. The patient underwent thyroidectomy, and histological examination disclosed a tumour in the left thyroid lobe, with the same pathological and immunohistochemical features as the previously excised caecal lesion (Fig. 2). Nonetheless, it was negative for Congo red, S-100 protein, and thyroglobulin stain; again, CDX-2 staining was positive, further confirming the caecal origin of this tumour (Fig. 3). Twenty one months after thyroidectomy, the patient died as a result of multiple organ failure.

To the best of our knowledge, this is the first case of a rare caecal NEC with metastasis to the thyroid to be reported. The differential diagnosis included several primary neoplasms. MTC is characterised by positive immunostaining for calcitonin; nonetheless, calcitonin can also be produced ectopically. In our patient, weak positivity for calcitonin was found at immunohistochemical examination; however, staining for thyroid transcription factor 1, a marker of thyroid or lung origin, was negative, whereas CDX-2, a transcription factor involved in the proliferation and differentiation of intestinal epithelial cells encoded by a homeobox gene, was positive, excluding MTC. Paranganglioma was ruled out by both the intense reactivity of neoplastic cells for cytokeratin, and the absence of sustentacular cells, as shown by negativity for S-100 protein. Insular carcinoma could be excluded by the absence of a microfolicular pattern, the negative immunoreaction against thyroglobulin, and the positive immunostaining for neuroendocrine markers. Finally, a few cases of primary small cell carcinoma of the thyroid have been described, which share identical pathological and immunohistochemical features with primary lung small cell carcinoma. Some of them are positive for calcitonin, and are therefore regarded as small cell variants of MTC. In our patient, small cell carcinoma was ruled out firstly because of patient history and also by positive immunostaining for CDX-2.

**Figure 1** Primary neuroendocrine carcinoma of the caecum. Haematoxylin and eosin stain; original magnification, ×10.

**Figure 2** The caecal neuroendocrine tumour (right side of the figure) metastatic to the thyroid gland (on the left side) grew in a predominantly solid and trabecular architectural pattern, surrounded by a fibrovascular struma. Haematoxylin and eosin stain; original magnification, ×10.

**Figure 3** The thyroid metastasis was composed of spindle shaped cells with poorly defined cell borders, exhibiting scanty eosinophilic cytoplasm, salt and pepper nuclei, and inconspicuous nucleoli. The tumour cells showed intense nuclear staining for CDX-2 in contrast, thyroid epithelium was negative for this marker. CDX-2 staining; original magnification, ×40.

**References**
Liesegang rings supports the diagnosis of a characteristic histological configuration, as organs of true parasites and have a characteristic colloidal solution. The ring has developed within an area of chronic inflammation and is associated with a foreign body giant cell reaction.

Liesegang rings were related to duct ectasia. Liesegang rings were present in the lumen of one of the ectatic ducts and in the adjacent tissue with an associated foreign body type giant cell reaction.

Liesegang rings are laminated spherical ring-like structures that develop usually in relation to cyst or inflammatory lesions. The rings are typically composed of a mixture of calcium, iron, silicone, and sulfur and form by periodic precipitation from a supersaturated colloidal solution. Liesegang rings are rare and have been described primarily in the setting of renal cysts but have also been observed occasionally in association with breast cysts, endometriotic lesions, and cysts at other sites. In the above two cases, the Liesegang rings were related to duct ectasia and in the first case were an integral part of the mamegamous lesion. Liesegang rings may be mistaken for psammoma bodies or parasitides. Liesegang rings lack the internal organs of true parasites and have a characteristic histological configuration, as described above. Accurate identification of Liesegang rings supports the diagnosis of a cystic or inflammatory process, and decreases the possibility of erroneous misdiagnosis as another type of pathological process.

References

Congenital bronchochogenic cyst in the gastric mucosa

We read with interest the letter by Rubio et al., “Congenital bronchochogenic cyst in the gastric mucosa” in the March 2005 issue.1 In their report, the cyst they discovered contained pseudostratified ciliated epithelium with a lymphotic follicle. No cartilage was noted and no respiratory seromucous glands were mentioned. Although all bronchochogenic cysts must have ciliated epithelium (pseudostratified ciliated columnar or cuboidal epithelium), they may also have cartilage or bronchial mucous glands.2,3

Foregut cysts include bronchogenic, oesophageal, gastrointestinal, and pericardial types. The most common location for these cysts is in the mediastinum; however, cutaneous, cervical, diaphragmatic, abdominal, retroperitoneal, and gastric locations have all been described. Although gastrointestinal and pericardial cysts are straightforward to differentiate, the distinction between oesophageal and bronchochogenic cysts can be difficult because of their similar histological features, as a result of their close embryological development. All bronchochogenic cysts must have ciliated epithelium (pseudostratified ciliated columnar or cuboidal epithelium). They also must have cartilage or bronchial mucous glands. Oesophageal cysts can have ciliated or non-ciliated epithelium of columnar, squamous, or mixed types. This epithelium sits on two well developed layers of smooth muscle with no cartilage or respiratory glands. When a cyst is only lined by ciliated columnar epithelium with none of the above mentioned distinguishing features, a foregut cyst is the appropriate description.2,3

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References

Expression of HIF-1α in human tumours

In their recent letter,1 van Diest and colleagues make a valid point that the expression of molecular markers in the literature is often discordant because investigators do not use standard methodologies. The use of tissue microarrays or whole tissue sections is one example of this, and van Diest and colleagues correctly point out that the core redundancy in tissue microarrays necessary for an accurate reflection of hypoxia inducible factor α (HIF-1α) expression must be determined in a prospective fashion. Nevertheless, our evaluation of HIF-1α staining was carefully controlled; we stained all tissues with a single antibody, at the same time, and used positive internal cell line standards for each experiment.2 The assumption that the analysis of HIF-1α expression in whole sections is prognostically superior to tissue microarrays is unfounded at this time. Indeed, a report by Torhorst and colleagues suggests that the assessment of biomarker status in arrayed tissue cores may carry greater prognostic value than assessment in whole sections.3

The objective of our analysis was to demonstrate that vascular endothelial growth factor (VEGF) is upregulated independently of activated HIF-1α in most human tumours. This may imply constitutive overexpression or, more likely, reactive upregulation in response to other factors in the tumour microenvironment. The validity of this observation is not affected by the choice of tissue microarrays or whole sections. Indeed, a report by Mizukami and colleagues suggests that certain human cancers may exploit an HIF-1α independent mechanism to upregulate VEGF in response to hypoxia.4

In summary, we strongly support any move that would help to standardise the reporting of the expression of molecular markers in tissues. However, we stand by our observations that the upregulation of VEGF in human tumours is largely independent of HIF-1α activation.

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References

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CORRECTION

Salashor S, Woodgett JR. The links between axin and carcinogenesis. J Clin Pathol 2005; 58:225–36. The third sentence of the abstract should read: “overexpression of mutant axin...” and in fig 5 parts A and D are β catenin and B and E are axin 1. The authors apologise for these mistakes.