Loyola University Chicago Medical Center
Department of Pathology

Presents

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Case 1: Hepatocellular Carcinoma with Chondrosarcomatoid differentiation (Carcinosarcoma).

Drs. Julie Jackson, Gladell P. Paner and Sherri Yong

Clinical History

The patient is a 67-year-old male who presented to his primary care physician at an outside hospital complaining of right upper abdominal pain for 1 month. CT scan of the abdomen revealed a mass in the liver. A biopsy of the mass was performed at the outside hospital, which showed hepatocellular carcinoma, and the patient was subsequently referred to Loyola for definitive surgical treatment, which included a right hepatic lobectomy.

Differential Diagnosis:

The differential diagnosis for mixed epithelial and mesechymal tumors in the liver in adults include Mixed Epithelial and Meschymal variant of Hepatoblastoma, Collision Tumor, and Carcinosarcoma. In this case, hepatoblastoma is ruled out due to a lack of primitive/blastemal component. Collision tumor is ruled out due to presence of a transitional zone between the tranditional HCC component and the spindle cell component of the tumor. This case was, therefore, determined to be a Hepatocellular Carcinoma with Chondrosarcomatoid differentiation (Carcinosarcoma).

Discussion:

The exact definition and nomenclature of Carcinosarcoma/HCC with sarcomatous change is unclear and is debated. However, according to the WHO (2000), Carcinosarcoma is defined as a malignant tumor containing an intimate mixture of carcinomatous (either HCC or CCC) and sarcomatous elements. Hepatocellular Carcinomas with sarcomatoid differentiation are uncommon with an incidence estimated at 1.8% of surgically resected hepatocellular carcinomas. They tend to present in older males with a mean age of 59 years and a male to female ratio of >4:1. Cases showing chondrosarcomatous differentiation are even rarer, with only 4 prior cases reported.

Hepatocellular carcinomas with sarcomatous features are thought to arise when the carcinomatous components dedifferentiate into multipotent immature cells, which then re-differentiate into sarcomatous components. This theory of pathogenesis is supported by immunohistochemical studies. HCC with sarcomatous change has been linked to anticancer therapy, such as transcatheter arterial embolization, and one-shot injection of anticancer agents into the hepatic artery. In comparison to patients with ordinary HCC, patients with HCC with sarcomatous change tend to have lower AFP levels, have a significantly worse prognosis, and an increased incidence of extrahepatic metastasis. Studies comparing survival in patients with sarcomatous HCC receiving either liver transplantation or hepatic resection showed that there is no difference in survival between these treatments for sarcomatous HCC.

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Case 2: Follicular Dendritic Cell Sarcoma

Drs. Beatriz Sanchez, Gladell P. Paner and Swati Mehrotra

Clinical History:

This patient is a 46-year-old male who presented to Loyola University Medical Center with complaints of dysphagia over the course of one month. He also noticed a change in his voice. Additionally the patient had lost 8 lbs over the past month. An endoscopic examination revealed a large and friable mass at the base of tongue. A biopsy was performed. The slide provided is a representative section of the tongue mass.

Differential Diagnosis:

Squamous cell carcinoma
Ectopic thymoma
Malignant melanoma
Follicular dendritic cell sarcoma

Discussion:

Follicular dendritic cell sarcomas form a part of histiocytic and dendritic cell neoplasms in the WHO classification.. This tumor is of unknown etiology. It is most commonly found in lymph nodes involving the cervical region. However, a third of cases are extranodal – affecting most often the tonsil, spleen, oral cavity, and gastrointestinal tract. This rare tumor is seen predominantly in adults with a mean age of 44 years. It has an equal sex distribution. Clinically it presents as slow growing, painless mass with rare or no systemic symptoms. Grossly follicular dendritic sarcoma appears as solitary, well-circumscribed solid mass of a pink, white, and /or tan-gray color. The morphology is that of typical follicular dendritic cells: spindled or ovoid cells showing diffuse sheets or vague nodules consisting of individual cells with indistinct cell borders and a moderate amount of eosinophilic cytoplasm. Nuclei are oval or elongated and a characteristic histologic feature is the infiltration by small lymphocytes. The treatment consensus for minimal intervention is excision with wide margins. On occasion chemotherapy or even radiation can be used even though there are no studies showing the survival benefit.

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Case 3: Peripheral T-Cell Lymphoma Expressing CD15 and CD30

Drs. Nitin Wadhwani, Milind Velankar and Ameet R. Kini

Clinical History:

The patient is a 75 year old female with a medical history of osteoarthritis who presented to her primary care physician with a chief complaint of right hip pain. She stated that the pain has been present for over 4 years, but recently has *progressively worsened*. She had a CT and MRI of her right hip, which was remarkable for: right inguinal lymphadenopathy and a 3.6 cm ovoid mass in the right inguinal region adjacent to the right external iliac artery and vein. A core needle biopsy was performed from the right inguinal mass, but an excisional biopsy was recommended to obtain a more definitive diagnosis. A representative section is submitted for your review.

Differential diagnosis:

Classical Hodgkin Lymphoma
Anaplastic Large Cell Lymphoma (ALK-)
Peripheral T-Cell Lymphoma, NOS

Discussion:

Based on the expression of CD30 and CD15 by neoplastic cells, Classical Hodgkin Lymphoma is in the differential diagnosis. However, bright expression of CD45 by neoplastic cells and the presence of a positive T-cell receptor gamma gene rearrangement study by PCR are the findings that argue against the diagnosis of classical Hodgkin Lymphoma. The non cohesive pattern of neoplastic cells and negativity of neoplastic cells for cytotoxic molecules are the features that do not support a diagnosis of ALK(-) ALCL. Overall, the findings favor a diagnosis of Peripheral T-cell Lymphoma expressing CD15 and CD30.

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Case 4: Acquired cystic disease-associated renal cell carcinoma

Drs.Vikas Mehta, Gladell P. Paner, Maria M. Picken and Güliz A. Barkan

Clinical History:
A 38-year-old male with recurrent focal segmental glomerulosclerosis and two failed kidney transplantations underwent bilateral nephrectomies of native kidneys. CT had revealed retroperitoneal hemorrhage, and a decision was taken to remove both native kidneys. Gross specimen examination revealed multiple renal masses. This representative section is from one of the renal masses

Differential diagnosis:

Acquired cystic disease- associated renal cell carcinoma
Clear cell papillary renal cell carcinoma
Papillary renal cell carcinoma
Clear cell renal cell carcinoma
Disscussion:

End-stage renal disease is associated with an increased incidence of renal cell neoplasms. Among these, recent studies have identified tumors with unusual histological patterns that do not fit into the categories recognized in the current classification system. Our case showed a renal tumor composed mainly of large eosinophilic cells arranged in solid, cribriform, acinar, or papillary patterns. It also contained abundant deposits of calcium oxalate crystals. Immunohistochemistry displayed positive results for CD10, alpha-methylacyl-CoA racemase and focal positivity for cytokeratin 7. Tickoo SK et al studied 66 cases of epithelial neoplasm in end stage renal disease and found that the more common tumor that they designated as “acquired cystic disease-associated RCC” was seen as the dominant mass in 24 (36%) of 66 of the kidneys, and it formed the most common tumor type among the smaller nondominant masses, as well. The other category was “clear-cell papillary RCC of the end-stage kidneys,” present as the dominant mass in 15 (23%) of the 66 kidneys and occurring in both the ACDK and noncystic ESRD. Overall, the findings are consistent with a diagnosis of Acquired cystic disease-associated RCC in our case. These tumors are associated with acquired cystic disease and have immunophenotypes and genetic profiles distinct from the renal cell neoplasms recognized in the current classification of renal cell neoplasia, and should be considered as a distinct clinicopathologic entity in the spectrum of renal cell neoplasia.

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Case 5 - Diagnosis: Intraventricular Solitary Fibrous Tumor

Drs Omar Habeeb and John M. Lee, and Medical Student Pranav Gandhi (MS IV)

Clinical History:

A 67 year-old Caucasian male presented to his primary care physician in June 2009 with complaints of lethargy, memory lapses, and subjective changes in hearing over a six month period - along with incontinence x 2 months. The patient's past medical history was unremarkable. His neurological exam showed intact cranial nerves, 5/5 motor strength, symmetrical 2+ reflexes, and a 30/30 mini-mental status exam. Preliminary laboratory workup was within normal limits. An MRI with and without contrast was ordered. It revealed a heterogeneously enhancing, lobular extra-axial mass, which appeared to arise from the right tentorium cerebelli. The mass involved the superior and inferior tentorium, which caused subfalcine and uncal herniation. In addition, the mass extended into the middle and posterior cranial fossae. The mass was resected - and one representative section of the mass is submitted for your review.

Differential diagnosis:

Fibrous meningioma
Solitary fibrous tumor
Hemangiopericytoma

Discussion:

Based on the expression of CD34 and negative staining for EMA, we excluded the diagnosis of fibrous meningioma. Solitary fibrous tumor (SFT) and hemangiopericytoma (HPC) are now considered to be part of a pathologic spectrum, as both tumors are capable of sharing overlapping features. In our case, the combination of the hypercellular proliferation of spindle cells adjacent to hypocellular areas with myxoid degeneration helps favor the diagnosis of SFT. In addition, the diffuse pattern of CD34 and Bcl-2 staining further supports our diagnosis – and the low proliferation index (Ki67 <1%) serves to exclude malignant SFT.

References:

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Case 6: Malignant Solitary Fibrous Tumor

Drs. Anjali Godambe and Alia Salhadar

Clinical History:

A 48 year-old male patient presents to our institution with complaints of left pelvic pain, constipation, and dysuria. Full body CT scan showed two soft tissue nodules on the right psoas muscle, a left para-aortic

nodule, and a cystic lesion in the liver. The patient's past medical history includes prostatectomy and smoking. A CT-guided FNA of the left para-aortic nodule was performed.

Differential Diagnosis:

- Smooth Muscle Tumors
- Peripheral Nerve Sheath Tumor
- Solitary Fibrous Tumor (Benign/Malignant)
- GIST
- Benign processes, e.g. Fibromatosis

Discussion:

Solitary fibrous tumors (SFT's) are uncommon mesenchymal neoplasms. Originally described as a pleural tumor, it is now better understood to occur in virtually any location. Histologically, solitary fibrous tumors are characterized by their hemangiopericytoma-like staghorn vasculature. Sections of the tumor will show areas of hypo- and hypercellularity, the "patternless pattern." The immunohistochemical profile shows strong positivity for bcl-2, CD34, and CD99. Although the criterion for malignant solitary fibrous tumor is not standard, there is consensus for the existence of a malignant solitary fibrous tumor. The World Health Organization classification of soft tissue tumors describes the features of malignant solitary fibrous tumor as follows: hypercellularity, at least focal moderate to marked cellular atypia, tumor necrosis, infiltrative margins, and >4 mitoses/10 high-power fields.

The primary diagnosis of malignant solitary fibrous tumor is exceptionally rare. Ancillary studies (immunohistochemical stains, cytogenetics, etc.) are necessary to discriminate this entity from other spindle cell lesions on FNA material. Despite these additional tests, the entities within the realm of "spindle cell neoplasm" may be impossible to distinguish. In a study of 13 cases of malignant solitary fibrous tumor fine needle aspiration, the following salient cytopathological features were described:

- Hypercellular smears with cohesive and crowded tissue fragments, haphazard cell arrangements, lack of single cells.
- Mostly monotonous, plump spindled cells, blunt-ended and often indented nuclei, fragile wispy cytoplasm or bare nuclei.
- Some cases with predominance of small uniform epithelioid cells with ovoid nuclei, occasional prominent nucleoli.
- Some cases with loose myxomatous matrix or shredded collagenized stroma with groups of embedded neoplastic cells.
- Occasional mitoses, rare necrosis, focal pleomorphism.

In addition to the WHO features of malignancy, factors which may raise the possibility of a malignant (versus benign) solitary fibrous tumor include size >10cm and atypical location.
Our patient carried a previous diagnosis of malignant solitary fibrous tumor. We use this case, and the fine needle aspiration of his periaortic metastasis to highlight the cytopathological features of this rare, challenging, and interesting diagnosis.

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