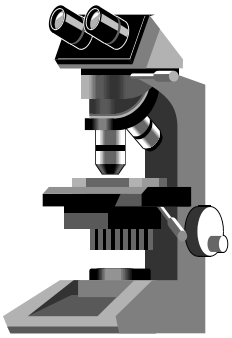
CALIFORNIA
TUMOR TISSUE REGISTRY

Genitourinary Pathology

Minutes – Subscription B

April 2016



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FILE DIAGNOSES

CTTR Subscription B April 2016

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CASE #1: **Accession No. 14776**

DIAGNOSIS: PENILE INTRAEPITHELIAL NEOPLASIA, PeIN III, PREPUCE

Diagnoses submitted in decreasing order of frequency:

High grade PeIN (basaloid type, HPV), Erythroplasia of Queyrat Bowenoid papulosis, differentiated penile IN
Squamous cell carcinoma in situ, HSIL (with HPV changes), Bowen's Disease
LSIL, Condyloma acuminatum (mild dysplasia, PeIN1)
Paget's Disease

Discussion

This is an example of high grade penile intraepithelial neoplasia (PeIN). Historically called erythroplasia of Queyrat, this erythematous carcinoma in situ lesion is located in the mucocutaneous epithelium of the glans and prepuce. It makes up less than 1% of malignancies in middle-aged to elderly males. It is seen almost exclusively in uncircumcised men. This lesion is associated with high-risk HPV (types 16 and 18). Progression to invasive carcinoma may occur in 10% - 30% of cases, spontaneous regression is unlikely.

There is epidermal acanthosis, parakeratosis, partial- or full-thickness epidermal atypia, and dyskeratosis. This case also shows HPV cytopathic changes.

CASE #2: **Accession No. 8222**

DIAGNOSIS: BENIGN PROSTATIC HYPERPLASIA WITH BASAL CELL HYPERPLASIA, PROSTATE

Diagnoses submitted in decreasing order of frequency:

Benign prostatic hyperplasia (with basal cell hyperplasia, transitional metaplasia)
Basal cell adenoma, adenoma
High grade PIN
Atypical adenomatous hyperplasia

Discussion

Prostate tissue shows benign prostatic hyperplasia with stromal and glandular proliferation. The prostatic glands focally show a proliferation of basal cells (2 or more in thickness). This uncommon pattern of benign hyperplasia is most common in the transition zone. It is often seen in association with squamous metaplasia and atrophy as a response to hormonal treatment. This case shows incomplete basal cell hyperplasia, with residual luminal secretory cells. The basal cells have scant cytoplasm and basophilic nuclei. Some basal cell

nuclei show a streaming pattern and are arranged parallel to the basement membrane. No desmoplastic stromal reaction is present. These basal cells are HMWCK, P63+.

Differential diagnosis includes prostatic carcinoma (cells are not so basophilic, do not stain for HMWCK markers), HGPIN (the atypical cells are negative for HMWCK markers, large cells with atypical nuclei, peripheral basal cells).

CASE #3: **Accession No. 19684**

DIAGNOSIS: BASAL CELL CARCINOMA, PROSTATE

Diagnoses submitted in decreasing order of frequency:

Basal cell carcinoma, Adenoid cystic, basaloid carcinoma
Basal cell carcinoma versus hyperplasia
High grade PIN
Urothelial carcinoma, nested variant
Prostatic adenocarcinoma
Foamy gland adenocarcinoma
Prostatic duct adenocarcinoma
Squamous metaplasia

Discussion

This tumor shows variably sized basaloid nests and small glands with focal cribriform architectural pattern and a surrounding desmoplastic stromal reaction. Basal cell carcinoma is a variant of prostatic carcinoma, most often seen in elderly males. This case shows a focal adenoid cystic pattern as seen in salivary glands. Tumor cells are HMWCK, BCL-2 (strong, diffuse) +, with high Ki67 (>20%). PSA and PAP are not elevated. Most cases are diagnosed on TURP specimens. Basal cell carcinoma cases may show local recurrence, only a minority of cases show aggressive behavior.

Differential diagnosis: Basal cell hyperplasia (Ki67 < 5%, BCL-2 negative, no infiltrative pattern, no perineural invasion)

CASE #4: **Accession No. 8624**

DIAGNOSIS: LEIOMYOSARCOMA, PROSTATE

Diagnoses submitted in decreasing order of frequency:

Leiomyosarcoma
Atypical smooth muscle tumor

Discussion

Primary prostate sarcomas arise from mesenchymal components of the prostate stroma and account for less

than 0.1% of primary prostate tumors. Leiomyosarcoma is the most common histological type in adults, while rhabdomyosarcoma is the most common in pediatric patients. Prostate leiomyosarcoma is an extremely rare and highly aggressive neoplasm. It is composed of a dominant population of neoplastic spindle cells, intermingled with giant neoplastic cells and scattered areas of necrosis. Tumor cells express smooth muscle markers, and are negative for S-100, cytokeratins, and CD117.

Leiomyosarcoma most commonly presents with signs and symptoms of urinary obstruction, hematuria and rectal pain. Most are high grade leiomyosarcomas composed of intersecting bundles of eosinophilic spindle-shaped cells with increased mitotic activity and moderate to severe nuclear atypia, with areas of necrosis and cystic degeneration. Cytogenetic analysis of primary prostatic leiomyosarcomas reveals clonal chromosomal rearrangements involving chromosomes 2, 3, 9, 11, and 19. It is an aggressive tumor, with a tendency to recur, and a mean survival of 3-4 years. Differential diagnosis: GIST (CD 117+), postoperative spindle cell nodule (history, no invasion, no atypical mitoses).

CASE NO #5: **Accession No. 31736**

DIAGNOSIS: DIFFUSE MALIGNANT MESOTHELIOMA, LEFT TESTIS

Diagnoses submitted in decreasing order of frequency:

Malignant mesothelioma (epitheliod)
Malignant Sertoli cell tumor
Leydig cell tumor
Spermatocytic seminoma
Anaplastic seminoma

Discussion

This is a destructive, infiltrative neoplasm with epitheliod neoplastic cells with eosinophilic cytoplasm. The cytologic features are relatively bland and uniform. Areas of necrosis are present. The immunoprofile with positive cytokeratin and calretinin staining favors a diffuse malignant mesothelioma. Tumor cells are negative for germ cell markers (AFP, CD 30, B-HCG, CD 117, OCT 4, PLAP).

Malignant mesothelioma of the tunica vaginalis testis is an extremely rare and aggressive tumor representing less than 1% of all malignant mesotheliomas. Median survival is less than 2 years. Median age of patients is 60 years, less often with a significant history of asbestos exposure. Patients usually present with hydrocele, less often a tersticular mass. Histologic types include epithelial, mesenchymal/sarcomatous and mixed/biphasic patterns. Microscopically, the tumor is most often characterized by epithelioid cells arising from the tunica vaginalis with papillary, tubulopapillary, or solid architectural patterns. Immunohistochemically, the tumor is usually positive for calretinin, WT-1, EMA, D2-40, CK7, CK 5/6 and thrombomodulin.

CASE #6: **Accession No. 31907**

DIAGNOSIS: ONCOCYTOMA WITH CENTRAL SCAR AND SCATTERED DYSTROPHIC CALCIFICATIONS, RIGHT KIDNEY

Diagnoses submitted in decreasing order of frequency:

Renal oncocytoma
Chromophobe renal cell carcinoma, eosinophilic type
Papillary renal cell carcinoma with oncocytic cells

Discussion

Renal oncocytoma is a benign well-circumscribed neoplasm with a dark brown or mahogany color, often with a central scar. Tumor is composed of round to polygonal eosinophilic (mitochondria-rich) cells forming solid nests, tubules or microcysts which appear to "float" in an edematous hypocellular stroma (in the central scar region). Tumor nuclei are uniformly round with inconspicuous nucleoli, and may show only focal degenerative nuclear atypia. Mitotic figures are infrequent and never atypical. Tumor is diffusely CD117+. Extensive sampling is recommended to confirm the diagnosis. Renal oncocytomas comprise <10% of adult renal neoplasms, are twice as common in males, usually present in older adults. Rare cases are associated with Birt-Hogg-Dube syndrome.

Differential diagnosis: Oncocytic RCC (necrosis, papillary architecture, mitoses, CK7 and AMACAR+), Chromophobe RCC (prominent cytoplasmic membranes – "plant cells", raisinoid nuclei, Hale colloidal iron +), oncocytic papillary RCC (predominant papillary architecture).

CASE #7: **Accession No. 23026**

DIAGNOSIS: CONGENITAL MESOBLASTIC NEPHROMA, KIDNEY

Diagnoses submitted in decreasing order of frequency:

Wilms tumor, Nephroblastoma
Congential mesoblastic nephroma (cellular type)
Infantile fibrosarcoma
Clear cell sarcoma

Discussion

This is an example of a congenital mesoblastic nephroma (CMN). Tumor consists of closely packed plump spindle cells with scant to moderate cytoplasm. Nuclei are spindle shaped and vesicular. Tumor shows poorly formed fascicles and sheet-like growth with numerous mitotic figures. Tumor is unencapsulated and shows circumscription on the outer renal margins, with areas of tumor fascicles interdigitating with and surrounding tubules and glomeruli the adjacent renal parenchyma. This tumor is best classified as a Mixed CMN as it shows features of both Classic and Cellular CMNs.

CMN is a rare stromal tumor of infancy, comprising 4% of pediatric renal neoplasms. Almost all reported cases are in patients less than 2 years of age. Tumors may also be discovered prenatally with fetal hydrops and polyhydramnios. Prognosis is excellent with complete excision. Advanced stage and cellular CMN are associated with more aggressive behavior and local recurrence. Tumor cells are positive for myofibroblast markers (smooth muscle actin, vimentin). Cellular CMN is associates with t(12;15)(p13;q25) resulting in the ETV-NTRK3 fusion protein – as is infantile fibrosarcoma.

Differential diagnosis:
Clear cell sarcoma (clear cells, chicken-wire vasculature, negative for muscle markers, low mitoses)

Wilms tumor (triphasic tumor, older age, WT1+)
Metanephric stromal tumor (older age, tumor nodules, heterologous differentiation, CD34+)
Rhabdoid tumor (epitheliod cells, prominent nucleoli, aggressive tumor with metastases, INI1-)

CASE #8: **Accession No. 28922**

DIAGNOSIS: CLEAR CELL SARCOMA, LEFT KIDNEY

Diagnoses submitted in decreasing order of frequency:

Clear cell sarcoma
Mixed epithelial and stromal tumor
Undifferentiated sarcoma
Metanephric stromal tumor
Myxoid fibrosarcoma
Juxtaglomerular cell tumor
Collecting duct carcinoma
Malignant small round blue cell tumor (PNET)
Diffuse large B-cell lymphoma with plasmacytoid features
Renal cell carcinoma with translocation of Xp11.2
Synovial sarcoma

Discussion

The neoplasm comprises small malignant cells, many of which demonstrate cytoplasmic clearing. The malignant cells seem to percolate between and surround tubules. Mitotic rate is low. No blastemal elements or primitive tubules/glomeruli are identified.

Clear cell sarcoma of the kidney (CCSK) is an uncommon aggressive renal neoplasm of childhood, with a propensity to metastasize to bone. It represents less than 3% of pediatric renal tumors. Majority of the cases are diagnosed in children aged 2-3 years. Histologically, clear cell sarcoma of the kidney shows 3 components (1) cord cells - small round-to-oval cells with deceptively bland features (2) septal cells - spindle-shaped cells along the fibrovascular septa; and (3) an intercellular matrix composed of mucopolysaccharide. Tumor cells usually test positive for vimentin, α_1-antitrypsin, and α_1–antichymotrypsin. Keratin stain is negative.

Differential diagnosis:
Malignant rhabdoid tumor (INI 1-)
Rhabdomyosarcoma (desmin, MyoD1 +)
Wilms tumor (multifocal, bilateral, heterologous elements, nephrogenic rests present, WT1 and CD 56+)
Neuroblastoma (NSE, CD 56, CD 57, synaptophysin, chromogranin, NFP, ALK 1 +)

CASE # 9: **Accession No. 20377**

DIAGNOSIS: MALIGNANT HEMANGIOPERICYTOMA/SOLITARY FIBROUS TUMOR VS PRIMITIVE SARCOMA (NOS), KIDNEY

Diagnoses submitted in decreasing order of frequency:

Hemangiopericytoma, malignant, solitary fibrous tumor
Neuroendocrine tumor / carcinoma (high grade, low grade)
Monophasic synovial sarcoma
Primitive neuroectodermal tumor, Ewing sarcoma
Wilms Tumor
Desmoplastic small round cell tumor
Neuroblastoma
Cellular mesoblastic nephroma

Discussion

This young patient expired secondary to respiratory arrest in the immediate post-operative period. Similar metastatic tumor was found in the right ventricle of the heart, lungs, liver, spleen, contralateral kidney and stomach. This old case from the CTTR archives was diagnosed as a probable malignant solitary fibrous tumor / HPC based on the morphologic features alone.

Solitary fibrous tumor (SFT) is a rare spindle cell neoplasm of mesenchymal origin that usually arises in the pleura. However, in recent years, there have been case reports of SFT arising in other organs, including the kidney. SFT stains positive for CD34, Bcl-2 and CD99. The majority of SFTs behave in a benign manner, however, a few show malignant behaviors. The diagnostic criteria for malignant extrathoracic SFTs include increased cellularity, pleomorphism and mitotic count more than 4 per 10 high power fields. Malignant SFT of the kidneys is rare, and only a handful of cases have been reported.

Morphologically, SFT is characterized by spindle cell proliferation with a pattern less architecture. Hyperchromatic and pleomorphic spindled cells surround gaping staghorn-like blood vessels. SFTs must be differentiated from other primary or metastatic malignant spindle cell tumors in the kidney including fibrous type monophasic synovial sarcoma, malignant peripheral nerve sheath tumors, fibrosarcoma, leiyomyosarcoma and low-grade fibromyxoid sarcoma. Immunohistochemical examination is necessary for precise classification.

CASE #10: **Accession No. 19042**

DIAGNOSIS: HODGKINS LYMPHOMA, KIDNEY

Diagnoses submitted in decreasing order of frequency:

Hodgkin lymphoma (classic, nodular sclerosis)
Anaplastic large cell lymphoma
Diffuse large B-cell lymphoma
Angiomyolipoma

Discussion

The kidneys are the most common abdominal organ affected by lymphoma. Primary renal lymphomas are very rare (<1%). Lymphomas in the kidney usually present as a mass lesion, typically after the diagnosis of lymphoma has already been established. Most are intermediate or high grade B cell non-Hodgkins lymphomas, including Burkitt and histiocytic varieties. Renal involvement in Hodgkins lymphoma are rare (<1%).

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