



CALIFORNIA  
TUMOR TISSUE REGISTRY

*TUMORS OCCURRING IN A PEDIATRIC POPULATION*

Minutes – Subscription A

March 2014



**SUGGESTED READING (General Topics from Recent Literature):**

- Cytokeratin 17: An adjunctive marker of invasion in squamous neoplastic lesions of the anus. Nazarian RM, Primiani A, et al. *Am J Surg Pathol* 2014; 38:78-85.
- Comparison of clinical and histologic diagnoses in 16,587 total joint arthroplasties: Implications for orthopedic and pathologic practices. DiCarlo EF and Klein MJ. *Am J Clin Pathol* 2014; 141:111-118.
- Postmortem examination in the morbidly obese. Fryer E, Roberts ISK, et al. *Histopathol* 2014; 64:200-210.
- Clinical next generation sequencing successfully applied to fine-needle aspirations of pulmonary and pancreatic neoplasms. Young G, Wang K, et al. *Cancer Cytopathol* 2013; 121:688-694.
- Arginase-1: A highly specific marker separating pancreatic adenocarcinoma from hepatocellular carcinoma. Fatima N, Cohen C and Siddiqui MT. *Acta Cytol* 2013; 58:83-88.

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## **FILE DIAGNOSES**

**CTTR Subscription A**

**March 2014**

**Case 1:**

Paraganglioma, retroperitoneum

**Case 2:**

Solitary fibrous tumor/hemangiopericytoma, retroperitoneum

**Case 3:**

Wilms tumor (nephroblastoma), kidney

**Case 4:**

Neuroblastoma with maturation (ganglioneuroblastoma), retroperitoneum

**Case 5:**

Langerhans cell histiocytosis, skull

**Case 6:**

Osteochondroma, tibia

**Case 7:**

Osteosarcoma, sacrum

**Case 8:**

Ameloblastoma, mandible

**Case 9:**

Giant cell tumor of bone, foot

**Case 10:**

Mixed malignant germ cell tumor (teratoma and embryonal carcinoma)/teratocarcinoma, and intratubular neoplasia, testis

Fontana (Kaiser Permanente) - Paranglioma  
Hayward Fremont (St. Rose Hospital) - Paranglioma, syndromic  
Long Beach (Long Beach VA) - Paranglioma  
San Diego (Naval Medical Center) - Pheochromocytoma  
Santa Barbara (Miramonte Lab) - Paranglioma  
Woodland Hills (Kaiser Permanente) - Paranglioma  
Arkansas (Associated Pathologists Laboratory) - Paranglioma  
Connecticut (Danbury Hospital) - Pheochromocytoma/paranglioma  
Delaware (Armed Forces Medical Examiner) - Pheochromocytoma  
Florida (Gastro Enterology Associates of Ocala) - Alveolar soft part sarcoma/clear cell sarcoma  
Florida (Florida Atlantic University) - Paranglioma  
Georgia, Atlanta - Paranglioma  
Georgia (Wellstar Healthcare System) - Paranglioma (4)/pheochromocytoma  
Illinois (Heartland Regional Medical Center) - Paranglioma  
Illinois, Oak Brook - Extra-adrenal paranglioma  
Illinois (Northwestern University) - Pheochromocytoma/paranglioma  
Maryland (Walter Reed National Military Medical Center) - Pheochromocytoma  
Massachusetts (University of Massachusetts Residents) - Paranglioma  
Michigan (University of Michigan) - Paranglioma  
Michigan (William Beaumont Hospital) - Paranglioma  
Minnesota (Fairview Ridges Hospital) - Pheochromocytoma  
Nebraska (Creighton University Medical Center) - Paranglioma  
New York (SUNY Downstate Medical Center) - Extra-adrenal paranglioma  
Ohio (Cleveland Clinic Residents) - Paranglioma  
Ohio (Summa Health System Residents) - Paranglioma  
Ohio (University of Toledo Medical Center Residents) - Paranglioma  
Pennsylvania (Lehigh Valley Hospital) - Paranglioma  
Puerto Rico (University of Puerto Rico Residents) - Paranglioma  
South Carolina (Medical University of South Carolina Residents) - Paranglioma  
Texas (Anderson Cancer Center) - Pheochromocytoma  
Texas (Crystal Beach) - Bilateral adrenocortical hyperplasia  
Texas, Lubbock - Paranglioma  
Wisconsin, Madison - Paranglioma  
Wisconsin (Medical College of Wisconsin) - Extra adrenal pheochromocytoma  
Wisconsin (Meriter Hospital) - Paranglioma  
Australia (Royal Hobart Hospital) - Paranglioma  
Australia (Royal Prince Alfred Hospital) - Paranglioma  
Brazil (Bahia Federal University) - Paranglioma  
Brazil (CIDAP) - Paranglioma  
Canada (Pasqua Hospital) - Pheochromocytoma  
Ireland (Kerry General Hospital) - Pediatric renal cell carcinoma  
Ireland (Mayo General Hospital) - Paranglioma  
Japan (Asahi General Hospital) - Paranglioma (1); Wilms tumor (1)  
Japan (University of Yamanashi) - Pheochromocytoma  
Japan (Wakayama Medical University) - Paranglioma  
Oman (Khoula Hospital) - Paranglioma  
Saudi Arabia (King Khalid University Hospital) - Paranglioma  
Singapore (KTPH Singapore) - Paranglioma  
Spain (Hospital Xeral de Vigo) - Paranglioma

**Case 1 - Diagnosis:**

Paranglioma, retroperitoneum

#### Case 1 - References:

Cytologic features of pheochromocytoma and retroperitoneal paraganglioma: a morphologic and immunohistochemical study of 13 cases.

*Acta Cytol* 2006; Jul-Aug;50(4): p372-8.

Jimenez-Heffernan JA, et al.

A case of large "silent" extra-adrenal retroperitoneal paraganglioma resected laparoscopically.

*Chin Med Sci J* 2010; Mar;25(1): p61-4.

Wen J; Li HZ, et al.

Adrenal and extra-adrenal nonfunctioning composite pheochromocytoma/paraganglioma with immunohistochemical ectopic hormone expression: comparison of two cases.

*Urol Int* 2010;;85(3): p368-72.

Gong J; Wang X, et al.

Composite paraganglioma with ganglioneuroma in the retroperitoneal space.

*Int J Urol* 2010; Apr;17(4): p385-6.

Ito H; Kurokawa T; Yokoyama O.

Nonfunctional retroperitoneal paraganglioma presenting as acute upper gastrointestinal hemorrhage.

*Hepatogastroenterology* 2010; Mar-Apr;57(98): p288-91.

Brankovic B; Radisavljevic M, et al.

Preaortic paraganglioma mimicking a hypervascular tumor of the pancreas.

*Hepatogastroenterology* 2004; Jul-Aug;51(58): p1198-201.

Mhanna T; Pianta E, et al.

#### **Case No. 2, Accession No. 31051**

**March 2014**

Fontana (Kaiser Permanente) - Solitary fibrous tumor/hemangiopericytoma

Hayward Fremont (St. Rose Hospital) - Inflammatory myofibroblastic tumor

Long Beach (Long Beach VA) - Hemangiopericytoma

San Diego (Naval Medical Center) - Solitary fibrous tumor, malignant

Santa Barbara (Miramonte Lab) - Malignant peripheral nerve sheath tumor

Woodland Hills (Kaiser Permanente) - Hemangiopericytoma

Arkansas (Associated Pathologists Laboratory) - Malignant peripheral nerve sheath tumor

Connecticut (Danbury Hospital) - Solitary fibrous tumor

Delaware (Armed Forces Medical Examiner) - Atypical solitary fibrous tumor

Florida (Gastro Enterology Associates of Ocala) - Malignant peripheral neuroectodermal tumor (PNET)

Florida (Florida Atlantic University) - Schwannoma

Georgia, Atlanta - Solitary fibrous tumor

Georgia (Wellstar Healthcare System) - Hemangiopericytoma/solitary fibrous tumor (3); Synovial sarcoma (1)

Illinois (Heartland Regional Medical Center) - Spindle cell stromal neoplasm

Illinois, Oak Brook - Infantile hemangiopericytoma

Illinois (Northwestern University) - Solitary fibrous tumor

Maryland (Walter Reed National Military Medical Center) - Solitary fibrous tumor

Massachusetts (University of Massachusetts Residents) - Hemangiopericytoma/solitary fibrous tumor

Michigan (University of Michigan) - Low grade fibromyxoid sarcoma

Michigan (William Beaumont Hospital) - Solitary fibrous tumor

Minnesota (Fairview Ridges Hospital) - Peripheral nerve sheath tumor

Nebraska (Creighton University Medical Center) - Solitary fibrous tumor

New York (SUNY Downstate Medical Center) - Solitary fibrous tumor

Ohio (Cleveland Clinic Residents) - Solitary fibrous tumor

Ohio (Summa Health System Residents) - Meningeal hemangiopericytoma

Pennsylvania (Lehigh Valley Hospital) - Epithelioid sarcoma

Puerto Rico (University of Puerto Rico Residents) - Malignant peripheral nerve sheath tumor

South Carolina (Medical University of South Carolina Residents) - Solitary fibrous tumor

Texas (Anderson Cancer Center) - GIST  
Texas (Crystal Beach) - Peripheral nerve sheath tumor (adrenal)  
Texas, Lubbock - Solitary fibrous tumor of low malignant potential  
Wisconsin, Madison - Solitary fibrous tumor  
Wisconsin (Medical College of Wisconsin) - Neural sheath tumor  
Wisconsin (Meriter Hospital) - Solitary fibrous tumor  
Australia (Royal Hobart Hospital) - Malignant peripheral nerve sheath tumor  
Australia (Royal Prince Alfred Hospital) - Solitary fibrous tumor  
Brazil (Bahia Federal University) - Solitary fibrous tumor, rule out IMFT (ALK)  
Brazil (CIDAP) - Low grade fusicellular tumor  
Canada (Pasqua Hospital) - Solitary fibrous tumor  
Ireland (Kerry General Hospital) - Solitary fibrous tumor  
Japan (Asahi General Hospital) - Solitary fibrous tumor (1); Ewings sarcoma (1)  
Japan (University of Yamanashi) - Solitary fibrous tumor  
Japan (Wakayama Medical University) - Solitary fibrous tumor  
Oman (Khoulia Hospital) - Extrapleural solitary fibrous tumor  
Saudi Arabia (King Khalid University Hospital) - Solitary fibrous tumor  
Singapore (KTPH Singapore) - Hemangiopericytoma  
Spain (Hospital Xeral de Vigo) - Solitary fibrous tumor/hemangiopericytoma

## **Case 2 - Diagnosis:**

Solitary fibrous tumor/hemangiopericytoma, retroperitoneum

## **Case 2 - References:**

Solitary fibrous tumour and haemangiopericytoma: evolution of a concept.

*Histopathology* 2006; Jan;48(1): p63-74.

Gengler C; Guillou L.

New insights into the hemangiopericytoma/solitary fibrous tumor spectrum of tumors.

*Curr Opin Oncol* 2009; Jul;21(4): p327-31.

Park MS; Araujo DM.

Malignant solitary fibrous tumor of retroperitoneum mimicking gastric submucosal tumor.

*Korean J Gastroenterol* (Korea 2011; Jan;57(1): p47-50.

Bae JM; Kim SW; Kim SW; Song SK

Successful outcome after resection of liver metastasis arising from an extraadrenal retroperitoneal paraganglioma that appeared 9 years after surgical excision of the primary lesion.

*Int J Clin Oncol* 2009; Oct;14(5): p473-7.

Noda T; Nagano H; Miyamoto A; Wada H; Murakami M; Kobayashi S; Marubashi S; Takeda Y; Dono K; Umeshita K; Wakasa K; Monden M.

[Solitary fibrous tumor and haemangiopericytoma: what is new?]

*Pathologie* 2010; Mar;31(2): p123-8.

Knosel T; Schulz B; Katenkamp K; Katenkamp D; Petersen I.

## **Case No. 3, Accession No. 31648**

**March 2014**

Fontana (Kaiser Permanente) - Wilms tumor  
Hayward Fremont (St. Rose Hospital) - Wilms tumor  
Long Beach (Long Beach VA) - Wilms tumor  
San Diego (Naval Medical Center) - Neuroblastoma, poorly differentiated  
Santa Barbara (Miramonte Lab) - Wilms tumor  
Woodland Hills (Kaiser Permanente) - Nephroblastoma  
Arkansas (Associated Pathologists Laboratory) - Wilms tumor  
Connecticut (Danbury Hospital) - Wilms tumor

Delaware (Armed Forces Medical Examiner) - Wilms tumor  
Florida (Gastro Enterology Associates of Ocala) - Wilms tumor  
Florida (Florida Atlantic University) - Neuroblastoma  
Georgia, Atlanta - Nephroblastoma (Wilms tumor)  
Georgia (Wellstar Healthcare System) - Wilm's tumor (3); Neuroblastoma (1)  
Illinois (Heartland Regional Medical Center) - Nephroblastoma  
Illinois, Oak Brook - Nephroblastoma  
Illinois (Northwestern University) - Wilms tumor  
Maryland (Walter Reed National Military Medical Center) - Nephroblastoma (Wilms tumor)  
Massachusetts (University of Massachusetts Residents) - Wilms tumor (nephroblastoma)  
Michigan (University of Michigan) - Nephroblastoma  
Michigan (William Beaumont Hospital) - Nephroblastoma (Wilms tumor)  
Minnesota (Fairview Ridges Hospital) - Primitive neuroectodermal tumor  
Nebraska (Creighton University Medical Center) - Nephroblastoma/Wilms  
New York (SUNY Downstate Medical Center) - Neuroblastoma  
Ohio (Cleveland Clinic Residents) - Wilms tumor  
Ohio (Summa Health System Residents) - Wilms, favorable histology  
Ohio (University of Toledo Medical Center Residents) - Wilms tumor  
Pennsylvania (Lehigh Valley Hospital) - Wilms tumor  
Puerto Rico (University of Puerto Rico Residents) - Wilms tumor  
South Carolina (Medical University of South Carolina Residents) - Wilms tumor  
Texas (Anderson Cancer Center) - Granulocytic sarcoma  
Texas (Crystal Beach) - Neuroblastoma  
Texas, Lubbock - Neuroblastoma  
Wisconsin, Madison - Wilms tumor  
Wisconsin (Medical College of Wisconsin) - Wilms tumor  
Wisconsin (Meriter Hospital) - Nephroblastoma  
Australia (Royal Hobart Hospital) - Wilms tumor  
Australia (Royal Prince Alfred Hospital) - Wilms tumor  
Brazil (Bahia Federal University) - Wilms tumor  
Brazil (CIDAP) - Wilms tumor (nephroblastoma)  
Canada (Pasqua Hospital) - Wilms tumor  
Ireland (Kerry General Hospital) - Wilms tumor  
Ireland (Mayo General Hospital) - Wilms tumor  
Japan (Asahi General Hospital) - Nephroblastoma (2)  
Japan (University of Yamanashi) - Neuroblastoma  
Japan (Wakayama Medical University) - Wilms tumor  
Oman (Khoulia Hospital) - Wilms tumor (nephroblastoma)  
Saudi Arabia (King Khalid University Hospital) - Nephroblastoma (Wilms tumor) favorable histology  
Singapore (KTPH Singapore) - Wilms tumor  
Spain (Hospital Xeral de Vigo) - Wilms tumor

### **Case 3 - Diagnosis:**

Wilms tumor (nephroblastoma), kidney

### **Case 3 - References:**

Relapse of unilateral favorable histology Wilms tumor: significant clinicopathological factors.

*J Pediatr Surg* 2012; Dec;47(12): p2210-5.

Aoba T; Urushihara N, et al.

Clinicopathologic findings predictive of relapse in children with stage III favorable-histology Wilms tumor.

*J Clin Oncol* 2013; Mar 20;31(9): p1196-201.

Ehrlich PF; Anderson JR, et al.

p53 Immunohistochemistry expression in Wilms tumor: a prognostic tool in the detection of tumor aggressiveness.

*J Urol* 2013; Feb;189(2): p664-70.

Franken J; Lerut E, et al.

Defects in the DNA mismatch repair system do not contribute to the development of childhood Wilms tumors.  
*Pediatr Dev Pathol* 2013; Jan-Feb;16(1): p14-9.  
Segers H; van den Heuvel-Eibrink MM, et al.

Molecular characterization of Wilms tumor from a resource-constrained region of sub-Saharan Africa.  
*Int J Cancer* 2012; Sep 15;131(6): pE983-94.  
Murphy AJ; Axt JR, et al.

Bilateral wilms tumor with TP53-related anaplasia.  
*Pediatr Dev Pathol* 2013; May-Jun;16(3): p217-23.  
Popov SD; Vujanic GM, et al.

#### **Case No. 4, Accession No. 31553**

**March 2014**

Fontana (Kaiser Permanente) - Neuroblastoma, maturing  
Hayward Fremont (St. Rose Hospital) - Ganglioneuroblastoma  
Long Beach (Long Beach VA) - Ganglioneuroblastoma  
San Diego (Naval Medical Center) - Ganglioneuroblastoma, intermixed variant  
Santa Barbara (Miramonte Lab) - Ganglioneuroblastoma  
Woodland Hills (Kaiser Permanente) - Ganglioneuroblastoma  
Arkansas (Associated Pathologists Laboratory) - Ganglioneuroblastoma  
Connecticut (Danbury Hospital) - Ganglioneuroblastoma  
Delaware (Armed Forces Medical Examiner) - Ganglioneuroblastoma  
Florida (Gastro Enterology Associates of Ocala) - Ganglioneuroblastoma  
Florida (Florida Atlantic University) - Cystic ganglioneuroma  
Georgia, Atlanta - Ganglioneuroblastoma  
Georgia (Wellstar Healthcare System) - Ganglioneuroblastoma/neuroblastoma (3); Adrenal cortical carcinoma (1)  
Illinois (Heartland Regional Medical Center) - Ganglioneuroblastoma  
Illinois, Oak Brook - Paraganglioneuroblastoma  
Illinois (Northwestern University) - Ganglioneuroblastoma  
Maryland (Walter Reed National Military Medical Center) - Ganglioneuroblastoma  
Massachusetts (University of Massachusetts Residents) - Ganglioneuroblastoma, intermixed (schwannian stroma-rich)  
Michigan (University of Michigan) - Anaplastic neuroblastoma  
Michigan (William Beaumont Hospital) - Ganglioneuroblastoma, intermixed  
Minnesota (Fairview Ridges Hospital) - Ganglioneuroblastoma  
Nebraska (Creighton University Medical Center) - Neuroblastoma  
New York (SUNY Downstate Medical Center) - Differentiating neuroblastoma  
Ohio (Cleveland Clinic Residents) - Ganglioneuroblastoma  
Ohio (Summa Health System Residents) - Ganglioneuroblastoma, intermixed type  
Ohio (University of Toledo Medical Center Residents) - Ganglioneuroblastoma  
Pennsylvania (Lehigh Valley Hospital) - Ganglioneuroblastoma  
Puerto Rico (University of Puerto Rico Residents) - Ganglioneuroblastoma  
South Carolina (Medical University of South Carolina Residents) - Ganglioneuroblastoma  
Texas (Anderson Cancer Center) - Ganglioneuroblastoma  
Texas (Crystal Beach) - Ganglioneuroma  
Texas, Lubbock - Ganglioneuroblastoma  
Wisconsin, Madison - Neuroblastoma  
Wisconsin (Medical College of Wisconsin) - Differentiating neuroblastoma  
Wisconsin (Meriter Hospital) - Neuroblastoma  
Australia (Royal Hobart Hospital) - Ganglioneuroblastoma, intermixed type  
Australia (Royal Prince Alfred Hospital) - Ganglioneuroblastoma  
Brazil (Bahia Federal University) - Ganglioneuroblastoma  
Brazil (CIDAP) - Ganglioneuroma  
Canada (Pasqua Hospital) - Ganglioneuroblastoma  
Ireland (Kerry General Hospital) - Neuroblastoma  
Ireland (Mayo General Hospital) - Ganglioneuroblastoma

Japan (Asahi General Hospital) - Ganglioneuroblastoma (1); Germ cell tumor (1)  
Japan (University of Yamanashi) - Neuroblastoma  
Japan (Wakayama Medical University) - Ganglioneuroblastoma  
Oman (Khoula Hospital) - Ganglioneuroblastoma  
Saudi Arabia (King Khalid University Hospital) - Ganglioneuroblastoma  
Singapore (KTPH Singapore) - Ganglioneuroblastoma  
Spain (Hospital Xeral de Vigo) - Ganglioneuroblastoma

#### **Case 4 - Diagnosis:**

Neuroblastoma with maturation (ganglioneuroblastoma), retroperitoneum

#### **Case 4 - References:**

Retroperitoneal ganglioneuroblastoma resected 8 years after mass screening: a case report.

*J Pediatr Surg* 2007; Nov;42(11): pE29-32.

Nakaoka T; Uemura S, et al.

Genome analysis and gene expression profiling of neuroblastoma and ganglioneuroblastoma reveal differences between neuroblastic and Schwannian stromal cells.

*J Pathol* 2005; Nov;207(3): p346-57.

Coco S; Defferrari R, et al.

A composite pheochromocytoma/ganglioneuroblastoma of the adrenal gland.

*Pediatr Blood Cancer* 2010; Jul 1;54(7): p1032-4.

Thiel EL; Trost BA; Tower RL.

Ganglioneuroblastoma in a patient with crossed testicular ectopia.

*Urology* 2009; Nov;74(5): p1126-8.

Jeong HJ.

Fine-needle aspiration of ganglioneuroma, maturing type (a.k.a., "borderline ganglioneuroblastoma") in the mediastinum of a young man: Case report and discussion of classification.

*Diagn Cytopathol* 2012; Oct;40(10): p906-11.

Ponsford Tipps AM; Weidner N.

A rare ganglioneuroblastoma secreting dopamine and the value of its measurement in diagnosis and prognosis.

*Ann Clin Biochem* 2006; Jan;43(Pt 1): p73-6.

Sargazi M; Smith ML, et al.

#### **Case No. 5, Accession No. 31543**

**March 2014**

Fontana (Kaiser Permanente) - Eosinophilic granuloma

Hayward Fremont (St. Rose Hospital) - Langerhans cell histiocytosis

Long Beach (Long Beach VA) - Eosinophilic granuloma

San Diego (Naval Medical Center) - Langerhans cell histiocytosis

Santa Barbara (Miramonte Lab) - Eosinophilic granuloma

Woodland Hills (Kaiser Permanente) - Langerhans cell histiocytosis

Arkansas (Associated Pathologists Laboratory) - Langerhans cell histiocytosis

Connecticut (Danbury Hospital) - Eosinophilic histiocytoma/histiocytosis

Delaware (Armed Forces Medical Examiner) - Langerhans cell histiocytosis

Florida (Gastro Enterology Associates of Ocala) - Langerhans cell histiocytoma vs lymphoma

Florida (Florida Atlantic University) - Langerhans cell histiocytosis

Georgia, Atlanta - Langerhans cell histiocytosis

Georgia (Wellstar Healthcare System) - Langerhans cell histiocytosis (3); Eosinophilic granuloma (1)

Illinois (Heartland Regional Medical Center) - Langerhans cell histiocytosis

Illinois, Oak Brook - Langerhans histiocytosis

Illinois (Northwestern University) - Langerhans cell histiocytosis

Maryland (Walter Reed National Military Medical Center) - Langerhans histiocytosis



Massachusetts (University of Massachusetts Residents) - Langerhans cell histiocytosis  
Michigan (University of Michigan) - Eosinophilic granuloma  
Michigan (William Beaumont Hospital) - Langerhans cell histiocytosis  
Minnesota (Fairview Ridges Hospital) - Langerhans cell histiocytosis  
Nebraska (Creighton University Medical Center) - Langerhans cell histiocytosis  
New York (SUNY Downstate Medical Center) - Langerhans cell histiocytosis  
Ohio (Cleveland Clinic Residents) - Langerhans cell histiocytoma  
Ohio (Summa Health System Residents) - Langerhans cell histiocytosis  
Ohio (University of Toledo Medical Center Residents) - Langerhans histiocytosis  
Pennsylvania (Lehigh Valley Hospital) - Histiocytosis X  
Puerto Rico (University of Puerto Rico Residents) - Langerhans cell histiocytosis  
South Carolina (Medical University of South Carolina Residents) - Langerhans cell histiocytosis  
Texas (Anderson Cancer Center) - Langerhans cell histiocytosis  
Texas (Crystal Beach) - Langerhans cell histiocytosis  
Texas, Lubbock - Histiocytosis X  
Wisconsin, Madison - Langerhans cell histiocytosis  
Wisconsin (Medical College of Wisconsin) - Langerhans cell histiocytosis  
Wisconsin (Meriter Hospital) - Langerhans cell histiocytosis  
Australia (Royal Hobart Hospital) - Langerhans cell histiocytosis  
Australia (Royal Prince Alfred Hospital) - Langerhans cell histiocytosis  
Brazil (Bahia Federal University) - Langerhans cell histiocytosis  
Brazil (CIDAP) - Langerhans cell histiocytosis  
Canada (Pasqua Hospital) - Eosinophilic granuloma  
Ireland (Kerry General Hospital) - Langerhans granulomatosis  
Ireland (Mayo General Hospital) - Rhabdomyosarcoma  
Japan (Asahi General Hospital) - Langerhans cell histiocytosis (1); Clear cell sarcoma (1)  
Japan (University of Yamanashi) - Langerhans cell histiocytosis  
Japan (Wakayama Medical University) - Langerhans cell histiocytosis  
Oman (Khoula Hospital) - Langerhans cell histiocytosis  
Saudi Arabia (King Khalid University Hospital) - Langerhans cell histiocytosis  
Singapore (KTPH Singapore) - Langerhans cell histiocytosis X  
Spain (Hospital Xeral de Vigo) - Langerhans cell histiocytosis

#### **Case 5 - Diagnosis:**

Langerhans cell histiocytosis, skull

#### **Case 5 - References:**

Reactivations in multisystem Langerhans cell histiocytosis: data of the international LCH registry.

*J Pediatr* 2008; Nov;153(5): p700-5, 705.e1-2.

Minkov M; Steiner M, et al.

Craniofacial and intracranial manifestations of langerhans cell histiocytosis: report of findings in 100 patients.

*AJR Am J Roentgenol* 2008; Aug;191(2): p589-97.

D'Ambrosio N; Soohoo S, et al.

Langerhans cell histiocytosis of the temporal bone.

*Head Neck Pathol* 2008; Jun;2(2): p97-8.

Nelson BL.

Secondary amyloidosis associated with histiocytosis X.

*Amyloid* 2008; Mar;15(1): p69-71.

Perez-Martinez J; Marques M; Kilmurray L; Medina I; Nam-Cha SH; Llamas F; Gomez C; Barrientos A; Blanco J

Orbital Langerhans cell histiocytosis in adults.

*Ophthalmology* 2007; Aug;114(8): p1569-73.

Cheung N; Selva D; McNab AA.

Fontana (Kaiser Permanente) - Osteochondroma  
Hayward Fremont (St. Rose Hospital) - Osteochondroma  
Long Beach (Long Beach VA) - Osteochondroma  
San Diego (Naval Medical Center) - Osteochondroma  
Santa Barbara (Miramonte Lab) - Osteochondroma  
Woodland Hills (Kaiser Permanente) - Osteochondroma  
Arkansas (Associated Pathologists Laboratory) - Osteochondroma  
Connecticut (Danbury Hospital) - Osteochondroma  
Delaware (Armed Forces Medical Examiner) - Osteochondroma  
Florida (Gastro Enterology Associates of Ocala) - Osteochondroma  
Florida (Florida Atlantic University) - Osteochondroma  
Georgia, Atlanta - Osteochondroma  
Georgia (Wellstar Healthcare System) - Osteochondroma (4)  
Illinois (Heartland Regional Medical Center) - Osteochondroma  
Illinois, Oak Brook - Osteochondroma  
Illinois (Northwestern University) - Osteochondroma  
Maryland (Walter Reed National Military Medical Center) - Osteochondroma  
Massachusetts (University of Massachusetts Residents) - Osteochondroma  
Michigan (University of Michigan) - Osteochondroma  
Michigan (William Beaumont Hospital) - Osteochondroma  
Minnesota (Fairview Ridges Hospital) - Osteochondroma  
Nebraska (Creighton University Medical Center) - Osteochondroma  
New York (SUNY Downstate Medical Center) - Osteochondroma  
Ohio (Cleveland Clinic Residents) - Osteochondroma  
Ohio (Summa Health System Residents) - Osteochondroma  
Ohio (University of Toledo Medical Center Residents) - Osteochondroma  
Pennsylvania (Lehigh Valley Hospital) - Osteochondroma  
Puerto Rico (University of Puerto Rico Residents) - Osteochondroma  
South Carolina (Medical University of South Carolina Residents) - Osteochondroma  
Texas (Anderson Cancer Center) - Enchondroma  
Texas (Crystal Beach) - Osteochondroma  
Texas, Lubbock - Osteochondroma  
Wisconsin, Madison - Osteochondroma  
Wisconsin (Medical College of Wisconsin) - Osteochondroma  
Wisconsin (Meriter Hospital) - Osteochondroma  
Australia (Royal Hobart Hospital) - Osteochondroma  
Australia (Royal Prince Alfred Hospital) - Osteochondroma  
Brazil (Bahia Federal University) - Osteochondroma  
Brazil (CIDAP) - Osteochondroma  
Canada (Pasqua Hospital) - Osteochondroma  
Ireland (Kerry General Hospital) - Osteochondroma  
Ireland (Mayo General Hospital) - Osteochondroma  
Japan (Asahi General Hospital) - Osteochondroma (2)  
Japan (University of Yamanashi) - Osteochondroma  
Japan (Wakayama Medical University) - Osteochondroma  
Oman (Khoula Hospital) - Osteochondroma  
Saudi Arabia (King Khalid University Hospital) - Osteochondroma  
Singapore (KTPH Singapore) - Osteochondroma  
Spain (Hospital Xeral de Vigo) - Osteochondroma

**Case 6 - Diagnosis:**

Osteochondroma, tibia

#### Case 6 - References:

Proximal tibial osteochondromas in patients with fibrodysplasia ossificans progressiva.  
*J Bone Joint Surg Am* 2008; Feb;90(2): p366-74.  
Deirmengian GK; Hebel NM, et al.

Spontaneous regression of osteochondromas.  
*Skeletal Radiol* 2007; Jun;36(6): p531-4.  
Hoshi M; Takami M, et al.

Multiple exostosis: a short study of abnormalities near the growth plate.  
*J Pediatr Orthop B* 2007; Sep;16(5): p363-5.  
Mansoor A; Beals RK.

Multiple osteochondromas.  
*Orphanet J Rare Dis* 2008;;3:3.  
Bovee JV.

Transformation of solitary osteochondroma calcaneum to chondrosarcoma--a case report.  
*Indian J Pathol Microbiol* 2004; Jan;47(1): p42-3.  
Malik R; Kapoor N; Malik R.

Periosteal chondrosarcoma in a 9-year-old girl with osteochondromatosis.  
*Skeletal Radiol* 2005; Sep;34(9): p539-42.  
Weinberg J; Miller TT, et al.

#### **Case No. 7, Accession No. 31593**

**March 2014**

Fontana (Kaiser Permanente) - Osteosarcoma  
Hayward Fremont (St. Rose Hospital) - Osteosarcoma, (osteochondrosarcoma)  
Long Beach (Long Beach VA) - Osteogenic sarcoma  
San Diego (Naval Medical Center) - Osteosarcoma  
Santa Barbara (Miramonte Lab) - Osteosarcoma  
Woodland Hills (Kaiser Permanente) - Osteosarcoma  
Arkansas (Associated Pathologists Laboratory) - Chondroblastic osteosarcoma  
Connecticut (Danbury Hospital) - Osteogenic sarcoma  
Delaware (Armed Forces Medical Examiner) - Osteosarcoma  
Florida (Gastro Enterology Associates of Ocala) - Osteosarcoma (conventional)  
Florida (Florida Atlantic University) - Osteosarcoma, chondroblastic  
Georgia, Atlanta - Osteosarcoma  
Georgia (Wellstar Healthcare System) - Chondroblastic osteosarcoma (3); Chondrosarcoma (1)  
Illinois (Heartland Regional Medical Center) - Osteosarcoma  
Illinois, Oak Brook - Osteochondroma  
Illinois (Northwestern University) - Small cell osteosarcoma  
Maryland (Walter Reed National Military Medical Center) - Osteosarcoma  
Massachusetts (University of Massachusetts Residents) - Osteosarcoma  
Michigan (University of Michigan) - High grade osteosarcoma  
Michigan (William Beaumont Hospital) - Osteosarcoma  
Minnesota (Fairview Ridges Hospital) - Osteochondroma  
Nebraska (Creighton University Medical Center) - Osteosarcoma  
New York (SUNY Downstate Medical Center) - Osteosarcoma  
Ohio (Cleveland Clinic Residents) - Osteosarcoma  
Ohio (Summa Health System Residents) - Conventional osteosarcoma  
Ohio (University of Toledo Medical Center Residents) - Osteosarcoma  
Pennsylvania (Lehigh Valley Hospital) - Osteosarcoma  
Puerto Rico (University of Puerto Rico Residents) - Osteosarcoma  
South Carolina (Medical University of South Carolina Residents) - Osteosarcoma, classical  
Texas (Anderson Cancer Center) - Chondroblastic osteosarcoma

Texas (Crystal Beach) - Osteosarcoma  
Texas, Lubbock - Osteosarcoma  
Wisconsin, Madison - Osteosarcoma  
Wisconsin (Medical College of Wisconsin) - Osteosarcoma  
Wisconsin (Meriter Hospital) - Osteosarcoma  
Australia (Royal Hobart Hospital) - Osteosarcoma  
Australia (Royal Prince Alfred Hospital) - Osteosarcoma  
Brazil (Bahia Federal University) - Osteosarcoma  
Brazil (CIDAP) - Classic osteosarcoma  
Canada (Pasqua Hospital) - Osteosarcoma  
Ireland (Kerry General Hospital) - Osteogenic osteosarcoma  
Ireland (Mayo General Hospital) - Osteogenic osteosarcoma  
Japan (Asahi General Hospital) - Osteosarcoma (1); Desmoplastic small round blue cell tumor (1)  
Japan (University of Yamanashi) - Chondromyxoid fibroma  
Japan (Wakayama Medical University) - Osteosarcoma  
Oman (Khoula Hospital) - Osteosarcoma  
Saudi Arabia (King Khalid University Hospital) - Osteosarcoma  
Singapore (KTPH Singapore) - Osteosarcoma  
Spain (Hospital Xeral de Vigo) - Osteosarcoma

#### **Case 7 - Diagnosis:**

Osteosarcoma, sacrum

#### **Case 7 - References:**

Osteosarcoma of the pelvis in children and young adults: the St. Jude Children's Research Hospital experience.  
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Clinical outcomes of 54 pelvic osteosarcomas registered by Japanese musculoskeletal oncology group.  
*Oncology* 2005;68(4-6): p375-81.

Matsuo T; Sugita T; Sato K; Hotta T; Tsuchiya H; Shimose S; Kubo T; Ochi M.

Two cases of post-radiation osteosarcoma of the sacrum after pelvic irradiation for uterine cervical cancer.  
*Eur J Gynaecol Oncol* 2007;;28(6): p497-500.

Noh JM; Huh SJ.

Multiple primary cancers in patients with osteosarcoma: influence of anticancer drugs and genetic factors.  
*Am J Clin Oncol* 2004; Jun;27(3): p220-4.

Yonemoto T; Tatezaki S; Ishii T; Hagiwara Y; Inoue M.

Osteoblastic osteosarcoma: cytomorphologic characteristics and differential diagnosis on fine-needle aspiration.  
*Acta Cytol* 2012;;56(5): p481-6.

Sathiyamoorthy S; Ali SZ.

#### **Case No. 8, Accession No. 31647**

**March 2014**

Fontana (Kaiser Permanente) - Ameloblastoma  
Hayward Fremont (St. Rose Hospital) - Adamantinoma  
Long Beach (Long Beach VA) - Ameloblastoma  
San Diego (Naval Medical Center) - Ameloblastoma  
Santa Barbara (Miramonte Lab) - Ameloblastoma  
Woodland Hills (Kaiser Permanente) - Ameloblastoma  
Arkansas (Associated Pathologists Laboratory) - Ameloblastoma  
Connecticut (Danbury Hospital) - Adamantinoma/ameloblastoma  
Delaware (Armed Forces Medical Examiner) - Ameloblastoma  
Florida (Gastro Enterology Associates of Ocala) - Odontogenic keratocyst

Florida (Florida Atlantic University) - Ameloblastoma  
Georgia, Atlanta - Ameloblastoma  
Georgia (Wellstar Healthcare System) - Ameloblastoma (4)  
Illinois (Heartland Regional Medical Center) - Ameloblastoma  
Illinois, Oak Brook - Ameloblastoma  
Illinois (Northwestern University) - Ameloblastoma  
Maryland (Walter Reed National Military Medical Center) - Adamantinoma  
Massachusetts (University of Massachusetts Residents) - Ameloblastoma  
Michigan (University of Michigan) - Ameloblastoma  
Michigan (William Beaumont Hospital) - Ameloblastoma  
Minnesota (Fairview Ridges Hospital) - Ameloblastoma  
Nebraska (Creighton University Medical Center) - Ameloblastoma  
New York (SUNY Downstate Medical Center) - Ameloblastoma  
Ohio (Cleveland Clinic Residents) - Ameloblastoma  
Ohio (Summa Health System Residents) - Ameloblastoma  
Ohio (University of Toledo Medical Center Residents) - Ameloblastoma (plexiform type)  
Pennsylvania (Lehigh Valley Hospital) - Ameloblastoma  
Puerto Rico (University of Puerto Rico Residents) - Ameloblastoma  
South Carolina (Medical University of South Carolina Residents) - Ameloblastoma  
Texas (Anderson Cancer Center) - Ameloblastoma  
Texas (Crystal Beach) - Ameloblastoma  
Texas, Lubbock - Ameloblastoma  
Wisconsin, Madison - Ameloblastoma  
Wisconsin (Medical College of Wisconsin) - Ameloblastoma  
Wisconsin (Meriter Hospital) - Ameloblastoma  
Australia (Royal Hobart Hospital) - Ameloblastoma  
Australia (Royal Prince Alfred Hospital) - Ameloblastoma  
Brazil (Bahia Federal University) - Ameloblastoma  
Brazil (CIDAP) - Ameloblastoma  
Canada (Pasqua Hospital) - Ameloblastoma  
Ireland (Kerry General Hospital) - Ameloblastoma  
Ireland (Mayo General Hospital) - Ameloblastoma  
Japan (Asahi General Hospital) - Ameloblastoma (2)  
Japan (University of Yamanashi) - Ameloblastoma  
Japan (Wakayama Medical University) - Ameloblastoma  
Oman (Khoula Hospital) - Ameloblastoma  
Saudi Arabia (King Khalid University Hospital) - Ameloblastoma  
Singapore (KTPH Singapore) - Ameloblastoma  
Spain (Hospital Xeral de Vigo) - Ameloblastoma

#### **Case 8 - Diagnosis:**

Ameloblastoma, mandible

#### **Case 8 - References:**

Ameloblastoma of the mandible with pulmonary metastases 45 years after initial diagnosis.

*Respirology* 2009; Nov;14(8): p1208-11.

Papaioannou M; Manika K, et al.

Ameloblastoma in children and adolescents.

*Br J Oral Maxillofac Surg* 2010; Oct;48(7): p549-54.

Zhang J; Gu Z, et al.

Desmoplastic ameloblastoma: a rare odontogenic neoplasm with unusual radiographic and histomorphological presentation.

*BMJ Case Rep* 2013;;2013 p.

Belgaumi UI; Sundaresh KJ, et al.

Trisomy 7 as sole aberration in peripheral ameloblastoma of the mandible.

*J Oral Maxillofac Surg* 2013; Jul;71(7): p1217-9.  
Manor E; Delgado B, et al.

Ameloblastoma, solid/multicystic type.  
*Head Neck Pathol* 2009; Dec;3(4): p307-9.  
Bachmann AM; Linfesty RL.

Fine-needle aspiration cytology of ameloblastoma and malignant ameloblastoma: a study of 12 cases.  
*Diagn Cytopathol* 2013; Mar;41(3): p206-11.  
Klapsinou E; Stavros A, et al.

Ameloblastoma of the jaws: a retrospective analysis of 340 cases in a Malaysian population.  
*J Oral Maxillofac Surg* 2012; Mar;70(3): p608-15.  
Siar CH; Lau SH; Ng KH.

Metastasizing (malignant) ameloblastoma: review of a unique histopathologic entity and report of Mayo Clinic experience.  
*J Oral Maxillofac Surg* 2010; Dec;68(12): p2962-74.  
Van Dam SD; Unni KK; Keller EE.

## **Case No. 9, Accession No. 12640**

**March 2014**

Fontana (Kaiser Permanente) - Giant cell tumor  
Hayward Fremont (St. Rose Hospital) - Giant cell tumor of bone  
Long Beach (Long Beach VA) - Giant cell tumor  
San Diego (Naval Medical Center) - Giant cell tumor  
Santa Barbara (Miramonte Lab) - Giant cell tumor  
Woodland Hills (Kaiser Permanente) - Giant cell tumor  
Arkansas (Associated Pathologists Laboratory) - Giant cell tumor of bone  
Connecticut (Danbury Hospital) - Giant cell tumor  
Delaware (Armed Forces Medical Examiner) - Giant cell tumor of soft tissue  
Florida (Gastro Enterology Associates of Ocala) - Giant cell tumor of tendon sheath  
Florida (Florida Atlantic University) - Giant cell tumor of bone  
Georgia, Atlanta - Giant cell tumor  
Georgia (Wellstar Healthcare System) - Giant cell tumor of tendon sheath (3); Osteoblastoma (1)  
Illinois (Heartland Regional Medical Center) - Giant cell tumor  
Illinois, Oak Brook - Giant cell reparative granuloma  
Illinois (Northwestern University) - Giant cell tumor of bone  
Maryland (Walter Reed National Military Medical Center) - Giant cell tumor of bone  
Massachusetts (University of Massachusetts Residents) - Giant cell tumor of bone  
Michigan (University of Michigan) - Giant cell tumor of soft tissue  
Michigan (William Beaumont Hospital) - Giant cell tumor of bone  
Minnesota (Fairview Ridges Hospital) - Giant cell tumor  
Nebraska (Creighton University Medical Center) - Giant cell granuloma  
New York (SUNY Downstate Medical Center) - Giant cell tumor  
Ohio (Cleveland Clinic Residents) - Giant cell tumor of soft tissue  
Ohio (Summa Health System Residents) - Giant cell tumor of tendon sheath  
Ohio (University of Toledo Medical Center Residents) - Giant cell tumor of the bone  
Pennsylvania (Lehigh Valley Hospital) - Giant cell tumor (osteoclastoma)  
Puerto Rico (University of Puerto Rico Residents) - Giant cell tumor of bone  
South Carolina (Medical University of South Carolina Residents) - Giant cell tumor of tendon sheath  
Texas (Anderson Cancer Center) - Giant cell tumor  
Texas (Crystal Beach) - Giant cell tumor of bone  
Texas, Lubbock - Malignant giant cell tumor  
Wisconsin, Madison - Giant cell tumor of bone  
Wisconsin (Medical College of Wisconsin) - Giant cell tumor of bone  
Wisconsin (Meriter Hospital) - Giant cell tumor  
Australia (Royal Hobart Hospital) - Giant cell tumor of bone

Australia (Royal Prince Alfred Hospital) - Giant cell rich lesion, favor giant cell tumor of bone  
Brazil (Bahia Federal University) - Giant cell tumor (of tendon sheath)  
Brazil (CIDAP) - Giant cell tumor  
Canada (Pasqua Hospital) - Giant cell tumor  
Ireland (Kerry General Hospital) - Giant cell tumor  
Ireland (Mayo General Hospital) - Osteoclastoma  
Japan (Asahi General Hospital) - Giant cell tumor (2)  
Japan (University of Yamanashi) - Giant cell lesion of the small bone  
Japan (Wakayama Medical University) - Giant cell rich osteosarcoma  
Saudi Arabia (King Khalid University Hospital) - Giant cell tumor  
Singapore (KTPH Singapore) - Giant cell tumor  
Spain (Hospital Xeral de Vigo) - Giant cell tumor

#### **Case 9 - Diagnosis:**

Giant cell tumor of bone, foot

#### **Case 9 - References:**

A clinicopathological study of giant cell tumor of small bones.

*Ups J Med Sci* 2011; Nov;116(4): p265-8.

Yanagisawa M; Okada K, et al.

Giant cell tumor of the distal phalanx of the biphalangal fifth toe: a case report and review of the literature.

*J Foot Ankle Surg* 2011; Sep-Oct;50(5): p598-602.

Kiatisevi P; Thanakit V, et al.

Modern interpretation of giant cell tumor of bone: predominantly osteoclastogenic stromal tumor.

*Clin Orthop Surg* (Korea 2012 Jun;4(2): p107-16.

Kim Y; Nizami S, et al.

Tumors of the foot and ankle: experience with 153 cases.

*Foot Ankle Int* 2009; Sep;30(9): p836-41.

Chou LB; Ho YY; Malawer MM.

#### **Case No. 10, Accession No. 31025**

**March 2014**

Fontana (Kaiser Permanente) - Teratocarcinoma  
Hayward Fremont (St. Rose Hospital) - Teratocarcinoma (embryonal and immature teratoma)  
Long Beach (Long Beach VA) - Malignant mixed germ cell tumor  
San Diego (Naval Medical Center) - Mixed germ cell tumor, embryonal/teratoma  
Santa Barbara (Miramonte Lab) - Embryonal carcinoma  
Woodland Hills (Kaiser Permanente) - Mixed germ cell tumor (mature tumor)  
Arkansas (Associated Pathologists Laboratory) - Mixed germ cell tumor (embryonal carcinoma and teratoma)  
Connecticut (Danbury Hospital) - Mixed germ cell tumor (embryonal carcinoma)  
Delaware (Armed Forces Medical Examiner) - Malignant mixed germ cell tumor  
Florida (Gastro Enterology Associates of Ocala) - Benign cystic teratoma  
Florida (Florida Atlantic University) - Embryonal carcinoma with teratoma  
Georgia, Atlanta - Malignant mixed germ cell tumor with ITGCNU  
Georgia (Wellstar Healthcare System) - Mixed germ cell tumor (4)  
Illinois (Heartland Regional Medical Center) - Malignant mixed germ cell tumor (immature teratoma and embryonal carcinoma)  
Illinois, Oak Brook - Teratoma with embryonal carcinoma  
Illinois (Northwestern University) - Teratoma with mixed germ cell (embryonal and choriocarcinoma)  
Maryland (Walter Reed National Military Medical Center) - Mixed germ cell tumor  
Massachusetts (University of Massachusetts Residents) - Malignant mixed germ cell tumor  
Michigan (University of Michigan) - Mixed germ cell tumor (teratoma and embryonal carcinoma)  
Michigan (William Beaumont Hospital) - Mixed germ cell tumor

Minnesota (Fairview Ridges Hospital) - Mixed germ cell tumor, teratoma/embryonal carcinoma  
Nebraska (Creighton University Medical Center) - Mixed germ cell tumor; immature teratoma and embryonal components  
New York (SUNY Downstate Medical Center) - Teratocarcinoma  
Ohio (Cleveland Clinic Residents) - Germ cell tumor, embryonal component identified on slide; ITGCN  
Ohio (Summa Health System Residents) - Testicular mixed germ cell tumor with embryonal carcinoma and teratoma, with background of intratubular germ cell neoplasia  
Ohio (University of Toledo Medical Center Residents) - Mixed germ cell tumor  
Pennsylvania (Lehigh Valley Hospital) - Immature teratoma with embryonal carcinoma  
Puerto Rico (University of Puerto Rico Residents) - Mixed germ cell tumor (embryonal and teratoma; rule out choriocarcinoma)  
South Carolina (Medical University of South Carolina Residents) - Mixed germ cell tumor  
Texas (Anderson Cancer Center) - Malignant teratoma  
Texas (Crystal Beach) - Teratocarcinoma (embryonal carcinoma and yolk sac tumor)  
Texas, Lubbock - Mixed non-seminomatous germ cell tumor, 90% teratoma, 5% embryonal carcinoma, 5% yolk sac tumor  
Wisconsin, Madison - Malignant mixed germ cell tumor  
Wisconsin (Medical College of Wisconsin) - Mixed germ cell tumor with teratoma and embryonal carcinoma  
Wisconsin (Meriter Hospital) - Mixed germ cell tumor  
Australia (Royal Hobart Hospital) - Mixed germ cell tumor, immature teratoma plus embryonal carcinoma  
Australia (Royal Prince Alfred Hospital) - Mixed germ cell tumor  
Brazil (Bahia Federal University) - Malignant mixed germ cell tumor (immature teratoma, embryonal carcinoma and choriocarcinoma)  
Brazil (CIDAP) - Non-seminomatous germinative carcinoma  
Canada (Pasqua Hospital) - Teratoma and embryonal carcinoma  
Ireland (Kerry General Hospital) - Immature teratoma  
Ireland (Mayo General Hospital) - Embryonal carcinoma  
Japan (Asahi General Hospital) - Mixed embryonal carcinoma and teratoma (2)  
Japan (University of Yamanashi) - Embryonal carcinoma and teratoma  
Japan (Wakayama Medical University) - Mixed embryonal carcinoma and teratoma with intraglandular germ cell neoplasia, unclassified type  
Oman (Khoula Hospital) - Mixed germ cell tumor  
Saudi Arabia (King Khalid University Hospital) - Mixed germ cell tumor  
Singapore (KTPH Singapore) - Non-seminomatous GCT (teratoma)  
Spain (Hospital Xeral de Vigo) - Mixed germ cell tumor (teratoma and embryonal carcinoma) and intratubular neoplasia

#### **Case 10 - Diagnosis:**

Mixed malignant germ cell tumor (teratoma and embryonal carcinoma)/teratocarcinoma, and intratubular neoplasia, testis

#### **Case 10 - References:**

Rete testis invasion by malignant germ cell tumor and/or intratubular germ cell neoplasia: what is the significance of this finding?  
*Hum Pathol* 2010; Sep;41(9): p1339-44.  
 Vogt AP; Chen Z; Osunkoya AO.

Mixed testicular germ cell tumour in a patient with previous pineal germinoma.  
*J Neurooncol* 2011; Jan;101(1): p125-8.  
 Silva VB; Azevedo AL; Costa IM; Mafra MS; Passos-Coelho JL; Bravo-Marques JM.

CDX-2 expression in malignant germ cell tumors of the testes, intratubular germ cell neoplasia, and normal seminiferous tubules.  
*Tumour Biol* 2012; Dec;33(6): p2185-8.  
 Lee MJ; Vogt AP; Hsiao W; Osunkoya AO.

Contralateral testicular biopsy in testis cancer: current concepts and controversies.  
*BJU Int* 2009; Nov;104(9 Pt B): p1346-50.  
 Heidenreich A.



Unusual presentation of mixed germ cell tumour from testis in a 45-year-old man.  
*BMJ Case Rep* 2011;;2011 p.  
Wani AM; Al Zayyani NR; Jacob S.