



CALIFORNIA
TUMOR TISSUE REGISTRY

NEUROENDOCRINE PATHOLOGY

Minutes – Subscription B

February 2011



SUGGESTED READING (General Topics from Recent Literature):

- Morphologic Features Are Useful in Distinguishing Barrett Esophagus from Carditis with Intestinal Metaplasia. Srivastava A, Odze RD, et al. *Am J Surg Pathol* 2007; 31:1733-1741.
- Cutaneous CD34+ Spindle cell Neoplasms: Histopathologic Features Distinguish Spindle Cell Lipoma, Solitary Fibrous Tumor, and Dermatofibrosarcoma Protuberans. Wood L, Fountaine TJ, et al. *Am J Dermatopathol* 2010; 32:764-768.
- Urothelial Carcinoma of the Bladder with Transmural and Direct Prostatic Stromal Invasion. Does Extent of Stromal Invasion Significantly Impact Patient Outcome? Oliva IV, Smith SL, et al. *Hum Pathol* 2011; 42:51-56.
- Multifocal Breast Cancer in Women ≤ 35 Years Old. Litton JK, Eralp Y, et al. *Cancer* 2007; 110:1445-1450.
- Solitary Fibrous Tumors of the Skin. A Clinicopathologic Study of 10 Cases and Review of the Literature. Erdag G, Qureshi HS, et al. *J Cutan Pathol* 2007; 34: 844-880.

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FILE DIAGNOSES

CTTR Subscription B

February 2011

Case 1:

Neuroblastoma, retroperitoneum
T-Y4600, M-95003

Case 2:

Neuroblastoma with focal treatment-related maturation to ganglioneuroblastoma, adrenal
T-93000, M-94903

Case 3:

Paraganglioma, retroperitoneum
T-Y4600, M-86801

Case 4:

Ganglioneuroma, adrenal
T-93000, M-94900

Case 5:

Low grade neuroendocrine tumor/Carcinoid tumor, kidney
T-71000, M-82401

Case 6:

Islet cell-carcinoid tumor, pancreatic bile duct (consultation by Juan Rosai, M.D.)
T-59010, M-81500

Case 7:

Carcinoid tumor/neuroendocrine carcinoma, colon
T-67000, M-82403

Case 8:

Large cell neuroendocrine carcinoma, lung
T-28000, M-80103

Case 9:

Pancreatic endocrine/neuroendocrine carcinoma, pancreas
T-59000, M-80103

Case 10:

Medullary carcinoma, thyroid
T-96000, D-2955

Carlsbad (Genoptix Medical Laboratory) - Pheochromocytoma
Glendale - Neuroblastoma
San Diego (Navel Medical Center) - Neuroblastoma, differentiating
Florida (Munroe Regional Medical Center) - Neuroblastoma
Florida (Naples Pathology Associates) - Neuroblastoma
Georgia, Atlanta - Neuroblastoma, differentiating
Illinois (Heartland Regional Medical Center) - Neuroblastoma
Illinois (Sarah Bush Lincoln Health Center) - Ossifying fibroma of jaw
Kansas (Coffeyville Regional Medical Center) - Neuroblastoma
Kansas (Petersen Laboratory Services) - Ganglioneuroblastoma
Maryland (University of Maryland) - Stroma rich neuroblastoma
Massachusetts (BWH Pathology) - Neuroblastoma
Michigan (Henry Ford Hospital) - GEP-NET
Michigan (Pinkus Dermatopathology Laboratory) - Ganglioneuroblastoma
New York (Buffalo General Hospital) - Poorly differentiated neuroblastoma
New York (SUNY Downstate Medical Center) - Neuroblastoma
New York (Westchester Medical Center) - Poorly differentiated neuroblastoma
Ohio, Columbus - Neuroblastoma
Ohio (University of Toledo Medical Center Residents) - Neuroblastoma, differentiating
Oklahoma (Oklahoma City) - Follicular neoplasm
Pennsylvania (Conemaugh Memorial Medical Center) - Neuroblastoma
Puerto Rico (University of Puerto Rico) - Neuroblastoma
Tennessee, Knoxville - Neuroblastoma
Texas, Crystal Beach - Abdominal paraganglioma
Texas, Lubbock - Neuroblastoma
Wisconsin, Madison - Neuroblastoma
Wisconsin (Medical Assessment and Consultation) - Neuroblastoma
Australia (Royal Prince Alfred Hospital) - Neuroblastoma
Canada (Pasqua Hospital) - Neuroblastoma
Canada (University of Sherbrooke) - Neuroblastoma
England (John Radcliffe Hospital) - Neuroblastoma
Ireland (University Hospital Galway) - Neuroblastoma
Japan (Asahi General Hospital) - Neuroblastoma
Japan (Setagaya-ku) - Neuroblastoma
Spain (Provisa Medical Center) - Ganglioneuroblastoma

Case 1 - Diagnosis:

Neuroblastoma, retroperitoneum
T-Y4600, M-95003

Case 1 - References:

Targeted molecular therapy for neuroblastoma: the ARF/MDM2/p53 axis. *J Natl Cancer Inst* 2009; Nov 18;101(22): p1527-9. Kim E; Shohet J.

Neuroblastoma: biology and staging. *Curr Oncol Rep* 2009; Nov;11(6): p431-8. Mueller S; Matthay KK.

Composite pheochromocytoma: a clinicopathologic and molecular comparison with ordinary pheochromocytoma and neuroblastoma. *Am J Clin Pathol* 2009; Jul;132(1): p69-73. Comstock JM; Willmore-Payne C; Holden JA; Coffin CM.

Neuroblastoma-like schwannoma of lumbar spinal nerve root. *J Neurosurg Spine* 2010; Jul;13(1): p82-6. Sharma GK; Eschbacher JM; Uschold TD; Theodore N.

Recent advances in neuroblastoma. *N Engl J Med* 2010; Jun 10;362(23): p2202-11. Maris JM.

Carlsbad (Genoptix Medical Laboratory) - Neuroblastoma
Glendale - Neuroblastoma
San Diego (Navel Medical Center) - Ganglioneuroblastoma
Florida (Munroe Regional Medical Center) - Ganglioneuroblastoma
Florida (Naples Pathology Associates) - Ganglioneuroblastoma
Georgia, Atlanta - Ganglioneuroblastoma
Illinois (Heartland Regional Medical Center) - Ganglioneuroblastoma with calcification
Illinois (Sarah Bush Lincoln Health Center) - Neuroblastoma
Kansas (Coffeyville Regional Medical Center) - Ganglioneuroblastoma
Kansas (Petersen Laboratory Services) - Ganglioneuroblastoma with treatment effect
Maryland (University of Maryland) - Ganglioneuroblastoma
Massachusetts (BWH Pathology) - Ganglioneuroblastoma
Michigan (Henry Ford Hospital) - Anaplastic neuroblastoma
Michigan (Pinkus Dermatopathology Laboratory) - Ganglioneuroblastoma with treatment effect
New York (Buffalo General Hospital) - Ganglioneuroblastoma
New York (SUNY Downstate Medical Center) - Neuroblastoma, poorly differentiated with treatment effect
New York (Westchester Medical Center) - Ganglioneuroblastoma
Ohio, Columbus - PNET vs. AT/RT vs. pancreaticoblastoma
Ohio (University of Toledo Medical Center Residents) - Neuroblastoma with chemotherapeutic effect
Oklahoma (Oklahoma City) - Papillary carcinoma, follicular variant
Pennsylvania (Conemaugh Memorial Medical Center) - Ganglioneuroblastoma
Puerto Rico (University of Puerto Rico) - Neuroblastoma with chemotherapy induced changes
Tennessee, Knoxville - Neuroblastoma with treatment effect
Texas, Crystal Beach - Pancreatoblastoma possible
Texas, Lubbock - Ganglioneuroblastoma
Wisconsin, Madison - Maturing neuroblastoma and ganglioneuroblastoma
Wisconsin (Medical Assessment and Consultation) - Ganglioneuroblastoma
Australia (Royal Prince Alfred Hospital) - Post chemotherapy neuroblastoma
Canada (Pasqua Hospital) - Ganglioneuroblastoma
Canada (University of Sherbrooke) - Neuroblastoma post chemotherapy
England (John Radcliffe Hospital) - Ganglioneuroblastoma
Ireland (University Hospital Galway) - Ganglioneuroblastoma
Japan (Asahi General Hospital) - Ganglioneuroblastoma
Japan (Setagaya-ku) - Ganglioneuroblastoma, post chemotherapy
Spain (Provisa Medical Center) - Ganglioneuroblastoma

Case 2 - Diagnosis:

Neuroblastoma with focal treatment-related maturation to ganglioneuroblastoma, adrenal
T-93000, M-94903

Case 2 - References:

A composite pheochromocytoma/ganglioneuroblastoma of the adrenal gland. *Pediatr Blood Cancer* 2010; Jul 1;54(7): p1032-4. Thiel EL; Trost BA; Tower RL.

Retroperitoneal ganglioneuroblastoma resected 8 years after mass screening: a case report. *J Pediatr Surg* 2007; Nov;42(11): pE29-32. Nakaoka T; Uemura S; Nakagawa Y; Yano T; Oda M..

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; Worth RC; Roberts NB.

The low-affinity neurotrophin receptor, p75, is upregulated in ganglioneuroblastoma/ganglioneuroma and reduces tumorigenicity of neuroblastoma cells in vivo. *Int J Cancer* 2009; May 15;124(10): p2488-94. Schulte JH; Pentek F; Hartmann W; Schramm A; Friedrichs N; Ora I; Koster J; Versteeg R; Kirfel J; Buettner R; Eggert A.

Histopathology defines prognostic subsets of ganglioneuroblastoma, nodular. *Cancer* 2000; Sep 1;89(5): p1150-61. Umehara S; Nakagawa A; Matthay KK; Lukens JN; Seeger RC; Stram DO; Gerbing RB; Shimada H.

Neuroblastoma, ganglioneuroblastoma, and ganglioneuroma: radiologic-pathologic correlation. *Radiographics* 2002; Jul-Aug;22(4): p911-34. Lonergan GJ; Schwab CM; Suarez ES; Carlson CL.

Case No. 3, Accession No. 21088

February 2011

Carlsbad (Genoptix Medical Laboratory) - Paranglioma
Glendale - Paranglioma
San Diego (Navel Medical Center) - Poorly differentiated neoplasm, favor paranglioma
Florida (Munroe Regional Medical Center) - Prostatic adenocarcinoma
Florida (Naples Pathology Associates) - Poorly differentiated prostatic carcinoma, need stains
Georgia, Atlanta - Paranglioma
Illinois (Heartland Regional Medical Center) - Poorly differentiated malignant neoplasm
Illinois (Sarah Bush Lincoln Health Center) - Medulloblastoma
Kansas (Coffeyville Regional Medical Center) - Paranglioma
Kansas (Petersen Laboratory Services) - High grade neuroendocrine carcinoma
Maryland (University of Maryland) - Paranglioma
Massachusetts (BWH Pathology) - Melanoma
Michigan (Henry Ford Hospital) - Medullary carcinoma of pancreas
Michigan (Pinkus Dermatopathology Laboratory) - Paranglioma
New York (Buffalo General Hospital) - Neuroendocrine carcinoma
New York (SUNY Downstate Medical Center) - Paranglioma
New York (Westchester Medical Center) - Paranglioma
Ohio, Columbus - Undifferentiated round blue cell malignant neoplasm vs. paranglioma
Ohio (University of Toledo Medical Center Residents) - Paranglioma
Oklahoma (Oklahoma City) - Papillary carcinoma
Pennsylvania (Conemaugh Memorial Medical Center) - Seminoma
Puerto Rico (University of Puerto Rico) - Malignant paranglioma vs. prostate adenocarcinoma with neuroendocrine differentiation
Tennessee, Knoxville - Pheochromocytoma
Texas, Crystal Beach - Seminoma
Texas, Lubbock - Paranglioma
Wisconsin, Madison - Metastatic prostate cancer vs. neuroendocrine carcinoma
Wisconsin (Medical Assessment and Consultation) - Paranglioma
Australia (Royal Prince Alfred Hospital) - Large neuroendocrine carcinoma
Canada (Pasqua Hospital) - Seminoma
Canada (University of Sherbrooke) - Undifferentiated tumor (neuroendocrine carcinoma?)
England (John Radcliffe Hospital) - PNET
Ireland (University Hospital Galway) - Primitive round cell tumor
Japan (Asahi General Hospital) - Paranglioma
Japan (Setagaya-ku) - Neuroendocrine carcinoma
Spain (Provisa Medical Center) - Paranglioma

Case 3 - Diagnosis:

Paranglioma, retroperitoneum
T-Y4600, M-86801

Case 3 - References:

Retroperitoneal paranglioma: EUS appearance and risk associated with EUS-guided FNA. *Gastrointest Endosc* 2004; Dec;60(6): p1018-21. Akdamar MK; Eltoum I; Eloubeidi MA.

Malignant retroperitoneal paraganglioma treated with concurrent radiotherapy and chemotherapy. *Clin Oncol (R Coll Radiol)* 2004; Dec;16(8): p580-1. Pitiakoudis M; Koukourakis M; Tsaroucha A; Manavis J; Polychronidis A; Simopoulos C.

Retroperitoneal paraganglioma. *Lancet* 2003; Oct 18;362(9392): p1266. Ota S; Ueoka H; Tanimoto M.

Biopsy of pheochromocytomas and paragangliomas: potential for disaster. *Surgery* 2009; Dec;146(6): p1158-66. Vanderveen KA; Thompson SM; Callstrom MR; Young WF; Grant CS; Farley DR; Richards ML; Thompson GB.

Cytomorphologic spectrum in paraganglioma. *Acta Cytol* 2008; Sep-Oct;52(5): p549-56. Varma K; Jain S; Mandal S.

Pheochromocytoma and extra-adrenal paraganglioma: updates. *Arch Pathol Lab Med* 2008; Aug;132(8): p1272-84. Tischler AS.

Case No. 4, Accession No. 31281

February 2011

Carlsbad (Genoptix Medical Laboratory) - Ganglioneuroma
Glendale - Ganglioneuroma
San Diego (Navel Medical Center) - Ganglioneuroma, mature
Florida (Munroe Regional Medical Center) - Neurofibroma
Florida (Naples Pathology Associates) - Ganglioneuroma
Georgia, Atlanta - Ganglioneuroma
Illinois (Heartland Regional Medical Center) - Ganglioneuroma
Illinois (Sarah Bush Lincoln Health Center) - Anaplastic oligodendroglioma
Kansas (Coffeyville Regional Medical Center) - Ganglioneuroma
Kansas (Petersen Laboratory Services) - Ganglioneuroma
Maryland (University of Maryland) - Ganglioneuroma
Massachusetts (BWH Pathology) - Ganglioneuroma
Michigan (Henry Ford Hospital) - Ganglioneuroma
Michigan (Pinkus Dermatopathology Laboratory) - Ganglioneuroma
New York (Buffalo General Hospital) - Ganglioneuroma
New York (SUNY Downstate Medical Center) - Ganglioneuroma
New York (Westchester Medical Center) - Ganglioneuroma, mature type
Ohio, Columbus - Ganglioneuroma
Ohio (University of Toledo Medical Center Residents) - Ganglioma
Oklahoma (Oklahoma City) - Papillary carcinoma, solid variant
Pennsylvania (Conemaugh Memorial Medical Center) - Ganglioneuroma
Puerto Rico (University of Puerto Rico) - Ganglioneuroma
Tennessee, Knoxville - Ganglioneuroma
Texas, Crystal Beach - Ganglioneuroma
Texas, Lubbock - Ganglioneuroma
Wisconsin, Madison - Ganglioneuroma
Wisconsin (Medical Assessment and Consultation) - Ganglioneuroma
Australia (Royal Prince Alfred Hospital) - Ganglioneuroma
Canada (Pasqua Hospital) - Ganglioneuroma
Canada (University of Sherbrooke) - Ganglioneuroma
England (John Radcliffe Hospital) - Ganglioneuroma
Ireland (University Hospital Galway) - Ganglioneuroblastoma
Japan (Asahi General Hospital) - Ganglioneuroma
Japan (Setagaya-ku) - Ganglioneuroma
Spain (Provisa Medical Center) - Ganglioneuroma

Case 4 - Diagnosis:

Ganglioneuroma, adrenal
T-93000, M-94900

Case 4 - References:

Ganglioneuroma of the adrenal gland. *J Urol* 2009; Aug;182(2): p714-5. Allende DS; Hansel DE; MacLennan GT.

Fine needle aspiration cytology of ganglioneuroma. *Acta Cytol* 2008; May-Jun;52(3): p380-1. Catalina-Fernandez I; Saenz-Santamaria J; Lopez-Presa D.

Adrenal ganglioneuroma. *Am J Surg* 2007; Nov;194(5): p683-4. Maweja S; Materne R; Detrembleur N; de Leval L; Defechereux T; Meurisse M; Hamoir E.

Simultaneous occurrence of adrenal cortical adenoma and ganglioneuroma. *Histopathology* 2006; Aug;49(2): p206-8. Rodriguez-Justo M; Chan G; McNicol AM.

Hamartomatous polyps of the colon: ganglioneuromatous, stromal, and lipomatous. *Arch Pathol Lab Med* 2006 ; Oct;130(10): p1561-6. Chan OT; Haghighi P.

Case No. 5, Accession No. 31287

February 2011

Carlsbad (Genoptix Medical Laboratory) - Carcinoid tumor, renal

Glendale - Renal carcinoid

San Diego (Navel Medical Center) - Well-differentiated neuroendocrine carcinoma

Florida (Munroe Regional Medical Center) - Carcinoid tumor

Florida (Naples Pathology Associates) - Carcinoid tumor

Georgia, Atlanta - Carcinoid tumor, kidney

Illinois (Heartland Regional Medical Center) - Neuroendocrine carcinoma, grade 1 (carcinoid)

Illinois (Sarah Bush Lincoln Health Center) - Undifferentiated sarcoma

Kansas (Coffeyville Regional Medical Center) - Carcinoid tumor

Kansas (Petersen Laboratory Services) - Low grade neuroendocrine carcinoma

Maryland (University of Maryland) - Carcinoid (well-differentiated neuroendocrine tumor)

Massachusetts (BWH Pathology) - Well-differentiated neuroendocrine neoplasm

Michigan (Henry Ford Hospital) - Atypical carcinoid

Michigan (Pinkus Dermatopathology Laboratory) - Carcinoid tumor, possibly arising in a mature cystic teratoma

New York (Buffalo General Hospital) - Carcinoid tumor

New York (SUNY Downstate Medical Center) - Carcinoid tumor

New York (Westchester Medical Center) - Carcinoid tumor of kidney

Ohio, Columbus - Well-differentiated neuroendocrine carcinoma

Ohio (University of Toledo Medical Center Residents) - Carcinoid of kidney

Oklahoma (Oklahoma City) - Hurthle cell nodules in lymphocytic thyroiditis

Pennsylvania (Conemaugh Memorial Medical Center) - Neuroendocrine carcinoma of kidney

Puerto Rico (University of Puerto Rico) - Metastatic mixed endocrine-exocrine carcinoma of pancreas vs. teratoma with carcinoid tumor

Tennessee, Knoxville - Carcinoid tumor

Texas, Crystal Beach - Carcinoid tumor

Texas, Lubbock - Atypical carcinoid

Wisconsin, Madison - Carcinoid tumor

Wisconsin (Medical Assessment and Consultation) - Carcinoid tumor, kidney

Australia (Royal Prince Alfred Hospital) - Carcinoid tumor

Canada (Pasqua Hospital) - Carcinoid tumor

Canada (University of Sherbrooke) - Neuroendocrine carcinoma

England (John Radcliffe Hospital) - Renal carcinoid

Ireland (University Hospital Galway) - Renal carcinoid
Japan (Asahi General Hospital) - Renal carcinoid tumor
Japan (Setagaya-ku) - Carcinoid tumor
Spain (Provisa Medical Center) - Carcinoid tumor

Case 5 - Diagnosis:

Low grade neuroendocrine tumor/Carcinoid tumor, kidney
T-71000, M-82401

Case 5 - References:

Carcinoid tumor of the renal pelvis: consideration on the histogenesis. *Pathol Int* 2008; Jan;58(1): p51-4. Kuroda N; Katto K; Tamura M; Shiotsu T; Hes O; Michal M; Nagashima Y; Ohara M; Hirouchi T; Mizuno K; Hayashi Y; Lee GH.

Renal carcinoid tumor: a clinicopathologic study of 21 cases. *Am J Surg Pathol* 2007; Oct;31(10): p1539-44. Hansel DE; Epstein JI; Berbesu E; Fine SW; Young RH; Cheville JC.

Carcinoid tumor of the kidney. *J Urol* 2008; Nov;180(5): p2193. Canacci AM; MacLennan GT.

Does the distance to normal renal parenchyma (DTNRP) in nephron-sparing surgery for renal cell carcinoma have an effect on survival? *Anticancer Res* 2005; May-Jun;25(3A): p1629-32. Akcetin Z; Zugor V; Elsasser D; Krause FS; Lausen B; Schrott KM; Engehausen DG.

Pathologic features of renal cortical tumors. *Urol Clin North Am* 2008; Nov;35(4): p551-61; v Tickoo SK; Gopalan A.

The accuracy of 250 fine needle biopsies of renal tumors. *J Urol* 2005; Jul;174(1): p44-6. Wunderlich H; Hindermann W; Al Mustafa AM; Reichelt O; Junker K; Schubert J.

Case No. 6, Accession No. 24341

February 2011

Carlsbad (Genoptix Medical Laboratory) - Carcinoid tumor, bile duct
Glendale - Pancreatic endocrine tumor
San Diego (Navel Medical Center) - Well-differentiated neuroendocrine carcinoma
Florida (Munroe Regional Medical Center) - Goblet cell carcinoid
Florida (Naples Pathology Associates) - Acinar cell carcinoma
Georgia, Atlanta - Carcinoid tumor, ampulla
Illinois (Heartland Regional Medical Center) - Neuroendocrine carcinoma, grade 1
Illinois (Sarah Bush Lincoln Health Center) - Atypical myxoid tumor
Kansas (Coffeyville Regional Medical Center) - Carcinoid tumor
Kansas (Petersen Laboratory Services) - Low grade neuroendocrine carcinoma
Maryland (University of Maryland) - Well-differentiated neuroendocrine carcinoma
Massachusetts (BWH Pathology) - Well-differentiated neuroendocrine neoplasm
Michigan (Henry Ford Hospital) - Acinar cell carcinoma
Michigan (Pinkus Dermatopathology Laboratory) - Carcinoid tumor
New York (Buffalo General Hospital) - Carcinoid tumor
New York (SUNY Downstate Medical Center) - Carcinoid tumor
New York (Westchester Medical Center) - Well-differentiated endocrine tumor, uncertain behavior
Ohio, Columbus - Well-differentiated neuroendocrine carcinoma
Ohio (University of Toledo Medical Center Residents) - Malignant neuroendocrine neoplasm of duodenum
Oklahoma (Oklahoma City) - Parathyroid adenoma
Pennsylvania (Conemaugh Memorial Medical Center) - Neuroendocrine carcinoma, low grade
Puerto Rico (University of Puerto Rico) - Neuroendocrine carcinoma vs. acinar cell carcinoma
Tennessee, Knoxville - Carcinoid tumor

Texas, Crystal Beach - Endocrine carcinoma, microglandular
Texas, Lubbock - Adenocarcinoid
Wisconsin, Madison - Carcinoid tumor (neuroendocrine carcinoma)
Wisconsin (Medical Assessment and Consultation) - Islet cell tumor, neoplasm
Australia (Royal Prince Alfred Hospital) - Pancreatic endocrine neoplasm
Canada (Pasqua Hospital) - Neuroendocrine tumor
Canada (University of Sherbrooke) - Neuroendocrine carcinoma (carcinoid)
England (John Radcliffe Hospital) - Pancreatic endocrine neoplasm
Ireland (University Hospital Galway) - Pancreatic endocrine tumor, well-differentiated
Japan (Asahi General Hospital) - Intraductal tubular adenoma
Japan (Setagaya-ku) - Neuroendocrine carcinoma, carcinoid
Spain (Provisa Medical Center) - Well-differentiated pancreatic endocrine carcinoma

Case 6 - Diagnosis:

Islet cell-carcinoid tumor, pancreatic bile duct (consultation by Juan Rosai, M.D.)
 T-59010; M-81500

Case 6 - References:

Carcinoid tumors of the pancreas: dynamic CT and MRI features with pathological correlation. *Abdom Imaging* 2009; Nov;34(6): p753-8. Takaji R; Matsumoto S; Mori H; Yamada Y; Hongo N; Tanoue S; Ota M; Kitano S; Fukuzawa K.

 Cytomorphological and immunohistochemical evaluation of a cystic pancreatic neuroendocrine tumour. *Cytopathology* 2007; Dec;18(6): p395-6. Shah B; Rana DN; Desai M.

 Carcinoids of the pancreas: an analysis of 156 cases. *Cancer* 2005; Sep 15;104(6): p1180-7. Soga J.

 PAX8 Expression in well-differentiated pancreatic endocrine tumors: correlation with clinicopathologic features and comparison with gastrointestinal and pulmonary carcinoid tumors. *Am J Surg Pathol* 2010; May;34(5): p723-9. Long KB; Srivastava A; Hirsch MS; Hornick.

 Carcinoid of the pancreas. *Pancreatology* 2000; 2(2): p163-6. Migliori M; Tomassetti P; Lalli S; Casadei R; Santini D; Corinaldesi R; Gullo L.

 Cytokeratin 7 and 20 and thyroid transcription factor 1 can help distinguish pulmonary from gastrointestinal carcinoid and pancreatic endocrine tumors. *Hum Pathol* 2001; Oct;32(10): p1087-93. Cai YC; Banner B; Glickman J; Odze RD.

 A 5-decade analysis of 13,715 carcinoid tumors. *Cancer* 2003; Feb 15;97(4): p934-59. Modlin IM; Lye KD; Kidd M.

Case No. 7, Accession No. 22038

February 2011

Carlsbad (Genoptix Medical Laboratory) - Carcinoid tumor, colon
Glendale - Carcinoid
San Diego (Navel Medical Center) - Well-differentiated neuroendocrine carcinoma
Florida (Munroe Regional Medical Center) - Carcinoid tumor
Florida (Naples Pathology Associates) - Carcinoid tumor
Georgia, Atlanta - Carcinoid tumor, colon
Illinois (Heartland Regional Medical Center) - Neuroendocrine carcinoma, grade 1 (carcinoid)
Illinois (Sarah Bush Lincoln Health Center) - Wilms tumor
Kansas (Coffeyville Regional Medical Center) - Carcinoid tumor
Kansas (Petersen Laboratory Services) - Low grade neuroendocrine carcinoma
Maryland (University of Maryland) - Well-differentiated neuroendocrine carcinoma

Massachusetts (BWH Pathology) - Well-differentiated neuroendocrine neoplasm
Michigan (Henry Ford Hospital) - Carcinoid tumor
Michigan (Pinkus Dermatopathology Laboratory) - Carcinoid tumor
New York (Buffalo General Hospital) - Atypical carcinoid
New York (SUNY Downstate Medical Center) - Carcinoid tumor
New York (Westchester Medical Center) - Carcinoid tumor
Ohio, Columbus - Well-differentiated neuroendocrine carcinoma
Ohio (University of Toledo Medical Center Residents) - Carcinoid of cecum
Oklahoma (Oklahoma City) - Paraganglioma
Pennsylvania (Conemaugh Memorial Medical Center) - Neuroendocrine carcinoma
Puerto Rico (University of Puerto Rico) - Well differentiated neuroendocrine neoplasm
Tennessee, Knoxville - Carcinoid tumor
Texas, Crystal Beach - Carcinoid
Texas, Lubbock - Carcinoid tumor
Wisconsin, Madison - Carcinoid tumor (neuroendocrine carcinoma)
Wisconsin (Medical Assessment and Consultation) - Carcinoid tumor, neoplasm; behaving in malignant fashion
Australia (Royal Prince Alfred Hospital) - Carcinoid tumor
Canada (Pasqua Hospital) - Carcinoid tumor
Canada (University of Sherbrooke) - Neuroendocrine carcinoma, atypical carcinoid
England (John Radcliffe Hospital) - Carcinoid tumor
Ireland (University Hospital Galway) - Neuroendocrine carcinoma, well-differentiated
Japan (Asahi General Hospital) - Carcinoid tumor
Japan (Setagaya-ku) - Neuroendocrine carcinoma, carcinoid
Spain (Provisa Medical Center) - Carcinoid well-differentiated endocrine tumor, carcinoma

Case 7 - Diagnosis:

Carcinoid tumor/neuroendocrine carcinoma, colon
 T-67000, M-82403

Case 7 - References:

The distribution of CD34-positive stromal cells and myofibroblasts in colorectal carcinoid tumors. *Histol Histopathol* 2005; Jan;20(1): p27-33. Kuroda N; Nakayama H; Miyazaki E; Toi M; Hiroi M; Enzan H.

Proposed staging system for gastrointestinal carcinoid tumors. *Am Surg* 2008; May;74(5): p418-22. Landry CS; McMasters KM; Scoggins CR; Martin RC.

Current status of gastrointestinal carcinoids. *Gastroenterology* 2005; May;128(6): p1717-51. Modlin IM; Kidd M; Latich I; Zikusoka MN; Shapiro MD.

Schistosoma japonicum infection and rectal carcinoid tumour: underreported coincidence or neglected association? *Epidemiol Infect* 2010; Sep;138(9): p1289-91. Zanger P; Habscheid W; Kremsner PG; Dahm.

Case No. 8, Accession No. 31246

February 2011

Carlsbad (Genoptix Medical Laboratory) - Atypical carcinoid tumor, lung (moderately differentiated neuroendocrine carcinoma)
Glendale - Large cell neuroendocrine tumor
San Diego (Navel Medical Center) - Large cell neuroendocrine carcinoma
Florida (Munroe Regional Medical Center) - Large cell neuroendocrine carcinoma
Florida (Naples Pathology Associates) - Large cell neuroendocrine carcinoma
Georgia, Atlanta - Atypical carcinoid, lung
Illinois (Heartland Regional Medical Center) - Neuroendocrine carcinoma, large cell, grade 3
Illinois (Sarah Bush Lincoln Health Center) - Fibroadenoma vs. benign phyllodes tumor
Kansas (Coffeyville Regional Medical Center) - Undifferentiated carcinoma of lung

Kansas (Petersen Laboratory Services) - Large cell neuroendocrine carcinoma
Maryland (University of Maryland) - Large cell neuroendocrine carcinoma
Massachusetts (BWH Pathology) - Large cell neuroendocrine carcinoma
Michigan (Henry Ford Hospital) - Large cell neuroendocrine tumor
Michigan (Pinkus Dermatopathology Laboratory) - Large cell neuroendocrine carcinoma
New York (Buffalo General Hospital) - Large cell neuroendocrine carcinoma
New York (SUNY Downstate Medical Center) - Large cell neuroendocrine carcinoma
New York (Westchester Medical Center) - Large cell neuroendocrine carcinoma
Ohio, Columbus - Moderate to poorly differentiated neuroendocrine carcinoma
Ohio (University of Toledo Medical Center Residents) - Large cell neuroendocrine carcinoma
Oklahoma (Oklahoma City) - Pheochromocytoma
Pennsylvania (Conemaugh Memorial Medical Center) - Large cell neuroendocrine carcinoma
Puerto Rico (University of Puerto Rico) - Large cell neuroendocrine carcinoma
Tennessee, Knoxville - Small cell carcinoma
Texas, Crystal Beach - Neuroendocrine carcinoma, lung
Texas, Lubbock - Neuroendocrine carcinoma
Wisconsin, Madison - Large cell neuroendocrine carcinoma
Wisconsin (Medical Assessment and Consultation) - Neuroendocrine carcinoma
Australia (Royal Prince Alfred Hospital) - Large cell neuroendocrine carcinoma
Canada (Pasqua Hospital) - Small cell carcinoma
Canada (University of Sherbrooke) - Neuroendocrine carcinoma, high grade
England (John Radcliffe Hospital) - Moderately differentiated neuroendocrine carcinoma, atypical carcinoid
Ireland (University Hospital Galway) - Large cell neuroendocrine carcinoma
Japan (Asahi General Hospital) - Large cell neuroendocrine carcinoma
Japan (Setagaya-ku) - Neuroendocrine carcinoma, atypical carcinoid
Spain (Provisa Medical Center) - Neuroendocrine carcinoma

Case 8 - Diagnosis:

Large cell neuroendocrine carcinoma, lung
 T-28000, M-80103

Case 8 - References:

Small cell carcinoma of the lung and large cell neuroendocrine carcinoma interobserver variability. *Histopathology* 2010; Feb;56(3): p356-63. den Bakker MA; Willemsen S; Grunberg K; Noorduijn LA; van Oosterhout MF; van Suylen RJ; Timens W; Vrugt B; Wiersma-van Tilburg A; Thunnissen FB.

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Primary sclerosing neuroendocrine carcinomas of the lung: A clinicopathologic and immunohistochemical study of 10 cases. *Am J Clin Pathol* 2010; Apr;133(4): p618-22. Kalhor N; Suster S; Moran CA .

CD99-positive large cell neuroendocrine carcinoma with rearranged EWSR1 gene in an infant: a case of prognostically favorable tumor. *Virchows Arch* 2010; Sep;457(3): p389-95. Malone VS; Dobin SM; Jones KA; Donner LR.

Discriminant model for cytologic distinction of large cell neuroendocrine carcinoma from small cell carcinoma of the lung. *J Thorac Oncol* 2010; Apr;5(4): p472-8. Hoshi R; Furuta N; Horai T; Ishikawa Y; Miyata S; Satoh Y.

Case No. 9, Accession No. 24421

February 2011

Carlsbad (Genoptix Medical Laboratory) - Nonfunctioning pancreatic neuroendocrine neoplasm, high grade
Glendale - Pancreatic endocrine tumor
San Diego (Navel Medical Center) - Well-differentiated pancreatic neuroendocrine carcinoma

Florida (Munroe Regional Medical Center) - Endocrine tumor
Florida (Naples Pathology Associates) - Pancreatic endocrine neoplasm
Georgia, Atlanta - Pancreatic endocrine/neuroendocrine neoplasm
Illinois (Heartland Regional Medical Center) - Poorly differentiated endocrine carcinoma, large cell
Illinois (Sarah Bush Lincoln Health Center) - Embryonal rhabdomyosarcoma vs. desmoplastic small round cell tumor
Kansas (Coffeyville Regional Medical Center) - Islet cell tumor
Kansas (Petersen Laboratory Services) - High grade neuroendocrine carcinoma
Maryland (University of Maryland) - Well-differentiated pancreatic neuroendocrine carcinoma
Massachusetts (BWH Pathology) - Undifferentiated neuroendocrine neoplasm of pancreas, small cell carcinoma
Michigan (Henry Ford Hospital) - High grade pancreatic neuroendocrine tumor
Michigan (Pinkus Dermatopathology Laboratory) - Atypical carcinoid
New York (Buffalo General Hospital) - Well-differentiated neuroendocrine carcinoma
New York (SUNY Downstate Medical Center) - Pancreatic endocrine neoplasm, tumor, high grade
New York (Westchester Medical Center) - Well-differentiated neuroendocrine carcinoma
Ohio, Columbus - Poorly differentiated malignant neoplasm
Ohio (University of Toledo Medical Center Residents) - Neuroendocrine neoplasm of pancreas
Oklahoma (Oklahoma City) - Poorly differentiated thyroid carcinoma
Pennsylvania (Conemaugh Memorial Medical Center) - High grade neuroendocrine carcinoma of pancreas
Puerto Rico (University of Puerto Rico) - Neuroendocrine tumor
Tennessee, Knoxville - Pancreatic neuroendocrine carcinoma
Texas, Crystal Beach - Neuroendocrine carcinoma, pancreas
Texas, Lubbock - Parathyroid
Wisconsin, Madison - Pancreatic endocrine tumor
Wisconsin (Medical Assessment and Consultation) - Pancreatic endocrine carcinoma, high grade
Australia (Royal Prince Alfred Hospital) - Pancreatic endocrine neoplasm
Canada (Pasqua Hospital) - Melanoma
Canada (University of Sherbrooke) - Paraganglioma
England (John Radcliffe Hospital) - Paraganglioma
Ireland (University Hospital Galway) - Gangliocytic paraganglioma
Japan (Asahi General Hospital) - Poorly differentiated endocrine carcinoma
Japan (Setagaya-ku) - Pancreatic endocrine neoplasm, poorly differentiated
Spain (Provisa Medical Center) - High grade malignant transformation in solid-pseudopapillary neoplasm/solid-pseudopapillary carcinoma

Case 9 - Diagnosis:

Pancreatic endocrine/neuroendocrine carcinoma, pancreas
 T-59000, M-80103

Case 9 - References:

Islet cell tumours. *Adv Exp Med Biol* 2010; 654:771-89. Ekeblad S.

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Prognostic and biological significance of cytokeratin 19 in pancreatic endocrine tumours. *Histopathology* 2007; Apr;50(5): p597-606. La Rosa S; Rigoli E; Uccella S; Novario R; Capella C.

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Carlsbad (Genoptix Medical Laboratory) - Medullary carcinoma
Glendale - Medullary carcinoma
San Diego (Navel Medical Center) - Medullary carcinoma of the thyroid
Florida (Munroe Regional Medical Center) - Medullary carcinoma
Florida (Naples Pathology Associates) - Paraganglioma
Georgia, Atlanta - Medullary carcinoma, thyroid
Illinois (Heartland Regional Medical Center) - Medullary carcinoma
Illinois (Sarah Bush Lincoln Health Center) - Cardiac glycogenosis
Kansas (Coffeyville Regional Medical Center) - Medullary (c-cell) carcinoma
Kansas (Petersen Laboratory Services) - Medullary carcinoma
Maryland (University of Maryland) - Medullary carcinoma
Massachusetts (BWH Pathology) - Medullary carcinoma
Michigan (Henry Ford Hospital) - Medullary carcinoma
Michigan (Pinkus Dermatopathology Laboratory) - Medullary carcinoma
New York (Buffalo General Hospital) - Medullary thyroid carcinoma
New York (SUNY Downstate Medical Center) - Medullary carcinoma
New York (Westchester Medical Center) - Medullary carcinoma of thyroid
Ohio, Columbus - Medullary carcinoma of the thyroid
Ohio (University of Toledo Medical Center Residents) - Medullary carcinoma of thyroid
Oklahoma (Oklahoma City) - Hyalinizing trabecular adenoma
Pennsylvania (Conemaugh Memorial Medical Center) - Medullary carcinoma of thyroid
Puerto Rico (University of Puerto Rico) - Medullary carcinoma
Tennessee, Knoxville - Medullary thyroid carcinoma
Texas, Crystal Beach - Medullary carcinoma, thyroid
Texas, Lubbock - Medullary carcinoma
Wisconsin, Madison - Medullary carcinoma
Wisconsin (Medical Assessment and Consultation) - Paraganglioma of thyroid gland
Australia (Royal Prince Alfred Hospital) - Medullary carcinoma
Canada (Pasqua Hospital) - Medullary carcinoma
Canada (University of Sherbrooke) - Medullary carcinoma
England (John Radcliffe Hospital) - Medullary carcinoma
Ireland (University Hospital Galway) - Medullary carcinoma
Japan (Asahi General Hospital) - Medullary carcinoma
Japan (Setagaya-ku) - Medullary carcinoma, thyroid
Spain (Provisa Medical Center) - Medullary carcinoma

Case 10 - Diagnosis:

Medullary carcinoma, thyroid
T-96000, D-2955

Case 10 - References:

Medullary thyroid carcinoma and biomarkers: past, present and future. *J Intern Med* 2009; Jul;266(1): p126-40.
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Familial medullary thyroid cancer: clinical aspects and prognosis. *Eur J Surg Oncol* 2005; May;31(4): p415-9.
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Medullary thyroid cancer: early detection and novel treatments. *Curr Opin Oncol* 2009; Jan;21(1): p5-10. Roman S; Mehta P; Sosa JA.

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