



CALIFORNIA
TUMOR TISSUE REGISTRY

NEUROENDOCRINE PATHOLOGY

Minutes – Subscription A

February 2002



SUGGESTED READING (General Topics from Recent Literature):

- Noval Mutations in the SDHD Gene in Pedigrees with Familial Carotid Body Paraganglioma and Sensorineural Hearing Loss. Badenhop RF, Cherian S, Lord RS, et al. *Genes Chromosomes Cancer* 2001; 31(3):255-263.
- Carney's Triad Paragangliomas. Colwell AS, D'Cunha J, and Maddaus MA. *J Thorac Cardiovasc Surg* 2001; 121(5):1011-1012.
- Cytokeratin 19 Immunoreactivity in the Diagnosis of Papillary Thyroid Carcinoma. Sahoo S, Hoda SA, et al. *Am J Clin Pathol* 2001; 116:696-702
- Diagnosis of "Follicular Neoplasm". A Gray Zone in Thyroid Fine-Needle Aspiration Cytology. Baloch ZW, Fleisher S, et al. *Diagn Cytopathol* 2002; 26(1):41-44.

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FILE DIAGNOSES

CTTR Subscription A

February 2002

Case 1:

Carotid body paraganglioma
T-94000, M-86801

Case 2:

Primitive neuroectodermal tumor (PNET), chest wall (Askin's tumor)
T-Y2150, M-93630

Case 3:

Small cell carcinoma likely metastatic from lung, skin of neck
T-Y0600, M-80413

Case 4:

Merkel cell carcinoma, skin
T-01000, M-83953

Case 5:

Malignant pancreatic endocrine tumor ("insulinoma"), pancreas
T-59000, M-81513

Case 6:

Carcinoid tumor, lung
T-28000, M-82401

Case 7:

Large cell neuroendocrine carcinoma, lung
T-28000, M-80123

Case 8:

Pheochromocytoma, adrenal
T-93020, M-87000

Case 9:

Neuroblastoma, adrenal
T-93000, M-95003

Case 10:

Malignant pancreatic endocrine neoplasm
T-59000, M-80003

Bakersfield - Paraganglioma
Bay Area - Carotid body tumor (paraganglioma) (3)
Fontana (Kaiser Permanente) - Paraganglioma
Long Beach - Carotid body paraganglioma (7)
Monterey (Community Hospital of Monterey Peninsula) - Paraganglioma
Orange (UCI Medical Center Residents) - Carotid body paraganglioma
Sacramento (UC Davis Medical Center) - Carotid body paraganglioma
San Diego (Naval Medical Center) - Carotid body tumor (paraganglioma) (2)
Santa Rosa - Carotid body paraganglioma (1); Paraganglioma (1)
Ventura - Carotid body paraganglioma (2)
Alabama (BMC Princeton) - Paraganglioma of carotid body
Arkansas (UAMS) - Carotid body paraganglioma
Connecticut (University of Connecticut Health Center) - Paraganglioma
Delaware (Christiana Hospital) - Carotid body tumor (paraganglioma)
Florida (Baptist Hospital) - Carotid body paraganglioma (1); Chemodectoma (carotid body tumor) (1); Paraganglioma (2); Chemodectoma (1)
Florida (Munroe Regional Medical Center) - Paraganglioma
Florida (Winter Haven Hospital) - Carotid body paraganglioma
Illinois (DuPage Pathology Associates) - Carotid body paraganglioma (2)
Illinois (Evanston Hospital) - Paraganglioma
Illinois (Northwestern Memorial Hospital) - Paraganglioma (carotid body tumor)
Illinois (Sarah Bush Lincoln Health Center) - Carotid body paraganglioma
Maryland (Johns Hopkins Hospital Residents) - Paraganglioma (1); Paraganglioma (carotid body tumor) (1)
Maryland (National Naval Medical Center) - Paraganglioma (12)
Maryland (Northwest Hospital Center) - Paraganglioma
Massachusetts (Berkshire Medical Center) - Paraganglioma
Massachusetts (Brigham and Women's Residents) - Carotid body paraganglioma
Massachusetts (New England Medical Center Residents) - Paraganglioma
Michigan (Oakwood Hospital) - Paraganglioma
Michigan (St. Joseph Mercy Hospital) - Paraganglioma
Mississippi, Gulfport - Paraganglioma
New Hampshire, Manchester - Paraganglioma
New Jersey (Overlook Hospital) - Carotid body tumor (4)
New York (Long Island Jewish Medical Center) - Carotid body paraganglioma
New York (Nassau County Medical Center) - Paraganglioma, carotid body
New York (Stony Brook Residents) - Carotid body paraganglioma
North Carolina (St Joseph Hospital) - Paraganglioma (3); Carotid body paraganglioma (1);
Oklahoma, South Tulsa - Carotid body paraganglioma
Pennsylvania (Allegheny General Hospital) - Extra adrenal paraganglioma
Pennsylvania (Lehigh Valley Hospital) - Chemodectoma
Pennsylvania (Memorial Medical Center) - Carotid body tumor
Puerto Rico (University of Puerto Rico) - Carotid body paraganglioma
Texas (Brooke Army Medical Center) - Paraganglioma
Texas (ProPath Services) - Carotid body tumor (paraganglioma) (2)
Texas (Scott & White Memorial Hospital) - Paraganglioma
Texas, Victoria - Carotid body paraganglioma
Vermont (Fletcher Allen Healthcare Center) - Paraganglioma
Washington, Steilacoom - Paraganglioma
West Virginia (Greenbrier Valley Medical Center) - Paraganglioma, carotid body
Wisconsin (Meriter Health Services) - Paraganglioma
Wisconsin, Milwaukee - Paraganglioma

Wisconsin (St. Mary's Hospital Medical Center) - Carotid body tumor (paraganglioma)
Australia (North Queensland Pathology Group) - Carotid body paraganglioma
Australia (Royal Prince Alfred Hospital) - Carotid body tumor/chemodectoma
Canada (Foothills Hospital) - Paraganglioma (carotid body)
Chile (University of Chile) - Paraganglioma
Japan (Yamanashi Medical University) - Carotid body paraganglioma (4)
Netherlands, Amsterdam - Carotid body paraganglioma
Saudi Arabia (King Khalid University Hospital Study Group) - Carotid body tumor/paraganglioma

Case 1 - Diagnosis:

Carotid body paraganglioma
 T-94000, M-86801

Case 1 – References:

Wang SJ, Wang MB, Barauskas TM, et al. Surgical Management of Carotid Body Tumors. *Otolaryngol Head Neck Surg* 2000; 123(3):202-206.
 Netterville JL, Reilly KM, Robertson D, et al. Carotid Body Tumors. A Review of 30 Patients with 46 Tumors. *Laryngoscope* 1995; 105(2):115-126.
 Sanghvi VD and Chandawarkar RY. Carotid Body Tumors. *J Surg Oncol* 1993; 54(3):190-192.
 Mum M, Polterauer P, Gstottner W, et al. Diagnostic and Therapeutic Approaches to Carotid Body Tumors. Review of 24 Patients. *Arch Surg* 1997; 132(3):279-284.
 Wang DG, Barros D'Sa AA, Johnson CF, et al. Oncogene Expression in Carotid Body Tumors. *Cancer* 1996; 77(12):2581-2587.

Case No. 2, Accession No. 28338

February 2002

Bakersfield - Ewing's sarcoma/PNET
Bay Area - PNET/Ewing's tumor (3)
Fontana (Kaiser Permanente) - Askin tumor (PNET/Ewing's sarcoma)
Long Beach - Ewing's/PNET (7)
Monterey (Community Hospital of Monterey Peninsula) - PNET
Orange (UCI Medical Center Residents) - Ewing's/PNET
Sacramento (UC Davis Medical Center) - Ewing's sarcoma (PNET)
San Diego (Naval Medical Center) - Ewing's/PNET (1); Peripheral neuroectodermal tumor/Ewing's sarcoma (1)
Santa Rosa - Primitive neuroectodermal tumor (PNET) (1); PNET (Askin's tumor) (1)
Ventura - Primitive neuroectodermal tumor (PNET) (2)
Alabama (BMC Princeton) - Ewing's/PNET of chest
Arkansas (UAMS) - PNET (malignant small-cell tumor of thoracopulmonary region, Askin's tumor)
Connecticut (University of Connecticut Health Center) - PNET
Delaware (Christiana Hospital) - Peripheral neuroblastoma (PNET)
Florida (Baptist Hospital) - Ewing's sarcoma (1); Ewing's sarcoma/PNET (1); Primitive neuroectodermal tumor (1); PNET (Askin's?) (1); Extraskelatal Ewing's sarcoma/PNET (1)
Florida (Munroe Regional Medical Center) - Primitive neuroectodermal tumor (PNET)
Florida (Winter Haven Hospital) - Primitive neuroectodermal tumor (PNET)
Illinois (DuPage Pathology Associates) - Chest wall mass/PNET (1); Peripheral neuroectodermal tumor (PNET)/Ewing's sarcoma (1)
Illinois (Evanston Hospital) - PNET (Askin's tumor)
Illinois (Northwestern Memorial Hospital) - Primitive neuroectodermal tumor
Illinois (Sarah Bush Lincoln Health Center) - Primitive neuroectodermal tumor
Maryland (Johns Hopkins Hospital Residents) - Fred Askin's tumor (PNET) (1); Small round blue cell tumor, most likely Askin's tumor (thoracopulmonary PNET) (1)
Maryland (National Naval Medical Center) - Extraskelatal Ewing's/PNET (12)
Maryland (Northwest Hospital Center) - Peripheral neuroectodermal tumor
Massachusetts (Berkshire Medical Center) - PNET
Massachusetts (Brigham and Women's Residents) - Ewing's sarcoma/MPNET

Massachusetts (New England Medical Center Residents) - PNET
Michigan (Oakwood Hospital) - Primitive neuroectodermal tumor
Michigan (St. Joseph Mercy Hospital) - PNET/Askin's tumor
Mississippi, Gulfport - PNET/Ewing's sarcoma
New Hampshire, Manchester - Primitive neuroectodermal tumor
New Jersey (Overlook Hospital) - Small cell malignant tumor of soft tissue (4)
New York (Long Island Jewish Medical Center) - Ewing's sarcoma
New York (Nassau County Medical Center) - Ewing's sarcoma, chest wall
New York (Stony Brook Residents) - Extraskelatal Ewing's sarcoma/PNET
North Carolina (St Joseph Hospital) - Ewing's sarcoma (3); Primitive neuroectodermal tumor (1)
Oklahoma, South Tulsa - Primitive neuroectodermal tumor (PNET)/extraosseous Ewing's sarcoma (1)
Pennsylvania (Allegheny General Hospital) - PNET
Pennsylvania (Lehigh Valley Hospital) - Extraskelatal Ewing's sarcoma/PNET
Pennsylvania (Memorial Medical Center) - Peripheral neuroendocrine tumor (Askin's tumor)
Puerto Rico (University of Puerto Rico) - PNET/Ewing's sarcoma
Texas (Brooke Army Medical Center) - Ewing's sarcoma
Texas (Propath Services) - Extraskelatal Ewing's sarcoma (1); Extrakeletal Ewing's sarcoma (PNET) (1)
Texas (Scott & White Memorial Hospital) - PNET
Texas, Victoria - PNET/Ewing's sarcoma
Vermont (Fletcher Allen Healthcare Center) - Ewing's sarcoma
Washington, Steilacoom - PNET
West Virginia (Greenbrier Valley Medical Center) - Malignant small cell tumor of the thoracopulmonary region (Askin's tumor)
Wisconsin (Meriter Health Services) - Extraskelatal Ewing's sarcoma/PNET
Wisconsin, Milwaukee - Askin's tumor
Wisconsin (St. Mary's Hospital Medical Center) - PNET (primitive neuroendocrine tumor)
Australia (North Queensland Pathology Group) - Primitive neuroectodermal tumor (PNET)
Australia (Royal Prince Alfred Hospital) - Primitive neuroectodermal tumor (PNET)/Askin tumor
Canada (Foothills Hospital) - Ewing's/PNET
Chile (University of Chile) - Desmoplastic small round cell tumor rule out Ewing's
Japan (Yamanashi Medical University) - Askin's tumor (4)
Netherlands, Amsterdam - PNET/Extraosseous Ewing's sarcoma
Saudi Arabia (King Khalid University Hospital Study Group) - Primitive neuroectodermal tumor (PNET)

Case 2 - Diagnosis:

Primitive neuroectodermal tumor (PNET), chest wall (Askin's tumor)
 T-Y2150, M-93630

Case 2 - References:

Zucman J, Melot T, Demaze C, et al. Combinational Generation of Variable Fusion Proteins in the Ewing Family of Tumors. *EMBO J* 1993; 12(12):4481-4487.
 Ladanyi M. The Emerging Molecular Genetics of Sarcoma Translocations. *Diag Molecular Pathol* 1995; 4(3):162-173.
 Schmidt D, Herrman C, Jurgeus H, et al. Malignant Peripheral Neuroectodermal Tumors and Its Necessary Distinction from Ewing's Sarcoma. *Cancer* 1991; 68(10):2251-2259.
 Weiss SW and Nickoloff BJ. CD34 Expressed by a Distinctive Cell Population in Peripheral Nerve, Nerve Sheath Tumors and Related Lesions. *Am J Surg Pathol* 1993; 17(10):1039-1045.

Case No. 3, Accession No. 13376

February 2002

Bakersfield - Small cell carcinoma of lung
Bay Area - Metastatic neuroendocrine carcinoma (? "oat cell") (3)
Fontana (Kaiser Permanente) - Metastatic small cell carcinoma of the lung
Long Beach - Neuroendocrine carcinoma (7)

Monterey (Community Hospital of Monterey Peninsula) - Small cell carcinoma vs. Merkel cell carcinoma
Orange (UCI Medical Center Residents) - Small cell carcinoma
Sacramento (UC Davis Medical Center) - Neuroendocrine carcinoma
San Diego (Naval Medical Center) - Metastatic small cell carcinoma (2)
Santa Rosa - Malignant neuroendocrine neoplasm metastatic vs. primary (2)
Ventura - Metastatic small cell carcinoma (2)
Alabama (BMC Princeton) - Metastatic small cell carcinoma
Arkansas (UAMS) - Merkel cell (neuroendocrine) carcinoma
Connecticut (University of Connecticut Health Center) - Small cell undifferentiated carcinoma, metastatic
Delaware (Christiana Hospital) - Metastatic small cell carcinoma (oat cell type)
Florida (Baptist Hospital) - Small cell (oat) carcinoma, intermediate cell type (1); Oat cell carcinoma (1); Neuroendocrine carcinoma, intermediate size cell (1); Small cell carcinoma (1); (Metastatic?) small cell undifferentiated carcinoma (oat cell) (1)
Florida (Munroe Regional Medical Center) - Small cell carcinoma
Florida (Winter Haven Hospital) - Metastatic small cell carcinoma
Illinois (DuPage Pathology Associates) - Neck skin mass, metastatic small cell carcinoma (vs. Merkel cell carcinoma) (1); Small cell undifferentiated carcinoma (1)
Illinois (Evanston Hospital) - Large cell neuroendocrine carcinoma
Illinois (Northwestern Memorial Hospital) - Metastatic small cell carcinoma
Illinois (Sarah Bush Lincoln Health Center) - Small cell neuroendocrine carcinoma favor metastatic from lung
Maryland (Johns Hopkins Hospital Residents) - Merkel cell carcinoma (rule out metastatic small cell with TTF-1) (1); Favor metastatic pulmonary small cell carcinoma (would perform TTF-1 and CK20 stains to confirm and rule out Merkel cell carcinoma) (1)
Maryland (National Naval Medical Center) - Merkel cell carcinoma (7); Metastatic small cell carcinoma (5)
Maryland (Northwest Hospital Center) - Large cell neuroendocrine carcinoma
Massachusetts (Berkshire Medical Center) - Metastatic small cell carcinoma
Massachusetts (Brigham and Women's Residents) - High grade neuroendocrine carcinoma, likely lung primary
Massachusetts (New England Medical Center Residents) - Metastatic neuroendocrine carcinoma from lung
Michigan (Oakwood Hospital) - Carcinoma with neuroendocrine features, Merkel cell vs. metastatic
Michigan (St. Joseph Mercy Hospital) - Metastatic small cell carcinoma
Mississippi, Gulfport - Small cell carcinoma, favor Merkel cell carcinoma
New Hampshire, Manchester - Malignant tumor, favor metastatic small cell carcinoma
New Jersey (Overlook Hospital) - Metastatic small cell carcinoma (4)
New York (Long Island Jewish Medical Center) - Metastatic small cell carcinoma of lung
New York (Nassau County Medical Center) - Small cell carcinoma, metastatic, neck skin
New York (Stony Brook Residents) - Metastatic pulmonary non-small cell carcinoma with neuroendocrine features
North Carolina (St Joseph Hospital) - Small cell carcinoma (4)
Oklahoma, South Tulsa - Neuroendocrine (Merkel cell) carcinoma of skin
Pennsylvania (Allegheny General Hospital) - Small cell vs. Merkel tumor
Pennsylvania (Lehigh Valley Hospital) - Small cell carcinoma
Pennsylvania (Memorial Medical Center) - Small cell carcinoma metastatic
Puerto Rico (University of Puerto Rico) - Large cell neuroendocrine carcinoma, metastatic
Texas (Brooke Army Medical Center) - Metastatic small cell vs. Merkel cell carcinoma
Texas (Propath Services) - Small cell (oat cell) carcinoma of lung (1); Anaplastic small cell (oat cell) carcinoma of lung (1)
Texas (Scott & White Memorial Hospital) - Small cell carcinoma
Texas, Victoria - Metastatic small cell carcinoma
Vermont (Fletcher Allen Healthcare Center) - Metastatic small cell carcinoma
Washington, Steilacoom - Metastatic small cell carcinoma
West Virginia (Greenbrier Valley Medical Center) - Merkel cell carcinoma
Wisconsin (Meriter Health Services) - Small cell carcinoma
Wisconsin, Milwaukee - Small cell carcinoma
Wisconsin (St. Mary's Hospital Medical Center) - Small cell anaplastic carcinoma involving skin (most likely metastatic from lung, less likely Merkel cell tumor)
Australia (North Queensland Pathology Group) - Small cell carcinoma
Australia (Royal Prince Alfred Hospital) - Small cell neuroendocrine carcinoma (? metastatic from lung/? Merkel cell carcinoma)

Canada (Foothills Hospital) - Small cell undifferentiated carcinoma, favor metastatic from lung
Chile (University of Chile) - Metastatic small cell lung carcinoma to the skin
Japan (Yamanashi Medical University) - Metastatic small cell carcinoma from the lung (4)
Netherlands, Amsterdam - Metastasis of an atypical carcinoid
Saudi Arabia (King Khalid University Hospital Study Group) - Small cell carcinoma intermediate cell type

Case 3 - Diagnosis:

Small cell carcinoma likely metastatic from lung, skin of neck
T-Y0600, M-80413

Case 3 - References:

Lookingbill DP. Cutaneous Metastases in Patients with Metastatic Carcinoma. A Retrospective Study of 4020 Patients. *J Am Acad Dermatol* 1993; 29:228-236.
Hanly AJ, Elgart GW, Jorda M, et al. Analysis of Thyroid Transcription Factor-1 and Cytokeratin 20 Separates Merkel Cell Carcinoma from Small Cell Carcinoma of Lung. *J Cutan Pathol* 2000; 27(3):118-120.
Schwendel A, Langreck H, Reichel M, et al. Primary Small-Cell Lung Carcinomas and Their Metastases are Characterized by a Recurrent Pattern of Genetic Alterations. *Int J Cancer* 1997; 74(1):86-93.
Schmidt U, Muller U, Metz KA, et al. Cytokeratin and Neurofilament Protein Staining in Merkel Cell Carcinoma of the Small Cell Type and Small Cell Carcinoma of the Lung. *Am J Dermatopathol* 1998; 20(4):346-351.
Fushimi H, Kikui M, Morino H, et al. Histologic Changes in Small Cell Lung Carcinoma after Treatment. *Cancer* 1996; 77(2):278-283.

Case No. 4, Accession No. 13111

February 2002

Bakersfield - Merkel cell carcinoma
Bay Area - Merkel cell carcinoma (3)
Fontana (Kaiser Permanente) - Extraskelatal Ewing's sarcoma vs. rhabdomyosarcoma, immunos needed
Long Beach - Neuroendocrine carcinoma (7)
Monterey (Community Hospital of Monterey Peninsula) - Clear cell sarcoma vs. clear cell carcinoma
Orange (UCI Medical Center Residents) - Ewing's/PNET
Sacramento (UC Davis Medical Center) - Merkel cell tumor
San Diego (Naval Medical Center) - Favor alveolar rhabdomyosarcoma (need immunos) (1); Small round blue cell tumor (1)
Santa Rosa - Clear cell carcinoma vs. hemangioendothelioma (1); Clear cell carcinoma vs. malignant tumor, NOS (1)
Ventura - Merkel cell carcinoma (2)
Alabama (BMC Princeton) - Embryonal rhabdomyosarcoma
Arkansas (UAMS) - Glomus tumor, infiltrative type
Connecticut (University of Connecticut Health Center) - Metastatic clear cell carcinoma, favor renal cell primary
Delaware (Christiana Hospital) - Glomus tumor
Florida (Baptist Hospital) - Malignant epithelial sarcoma ? immunostains would be of assistance/poorly differentiated synovial sarcoma (1); Round cell sarcoma (embryonal rhabdomyosarcoma?) immunostains would be helpful (1); PNET/Ewing's sarcoma (1); Ewing's sarcoma (1); Ewing's vs. epithelioid sarcoma (need immunostains)
Florida (Munroe Regional Medical Center) - Ewing's sarcoma
Florida (Winter Haven Hospital) - Extraosseous Ewing's tumor
Illinois (DuPage Pathology Associates) - Skin, thigh ? (1); Difficult to classify without immunostains (1)
Illinois (Evanston Hospital) - Metastatic carcinoid
Illinois (Northwestern Memorial Hospital) - Extraosseous Ewing's sarcoma
Illinois (Sarah Bush Lincoln Health Center) - Malignant spindle cell tumor, favor clear cell sarcoma
Maryland (Johns Hopkins Hospital Residents) - Clear cell sarcoma (1); Clear cell sarcoma, would confirm with S-100 and HMB45 immunostains (1)
Maryland (National Naval Medical Center) - PNET (10); Merkel cell (2)
Maryland (Northwest Hospital Center) - Rhabdomyosarcoma
Massachusetts (Berkshire Medical Center) - Merkel cell carcinoma
Massachusetts (Brigham and Women's Residents) - Primary neuroendocrine carcinoma of the skin (Merkel)
Massachusetts (New England Medical Center Residents) - Clear cell sarcoma of soft parts

Michigan (Oakwood Hospital) - Alveolar rhabdomyosarcoma vs. PNET
Michigan (St. Joseph Mercy Hospital) - Merkel cell carcinoma
Mississippi, Gulfport - PNET/Ewing's sarcoma
New Hampshire, Manchester - Malignant tumor, favor metastatic renal cell carcinoma
New Jersey (Overlook Hospital) - Merkel cell tumor (4)
New York (Long Island Jewish Medical Center) - Favor PNET
New York (Nassau County Medical Center) - Merkel cell tumor, thigh
New York (Stony Brook Residents) - Merkel cell carcinoma
North Carolina (St Joseph Hospital) - PNET vs. Ewing's sarcoma (3); Small round blue cell tumor (1)
Oklahoma, South Tulsa - Extrasosseous Ewing's sarcoma
Pennsylvania (Allegheny General Hospital) - Ewing's sarcoma
Pennsylvania (Lehigh Valley Hospital) - PNET
Pennsylvania (Memorial Medical Center) - Merkel's tumor
Puerto Rico (University of Puerto Rico) - Merkel cell carcinoma
Texas (Brooke Army Medical Center) - Extraskkeletal Ewing's sarcoma
Texas (ProPath Services) - Merkel cell carcinoma (2)
Texas (Scott & White Memorial Hospital) - Glomus tumor
Texas, Victoria - Neuroendocrine carcinoma (Merkel)
Vermont (Fletcher Allen Healthcare Center) - Merkel cell tumor
Washington, Steilacoom - Favor Ewing's sarcoma
West Virginia (Greenbrier Valley Medical Center) - Extrasosseous Ewing's sarcoma
Wisconsin (Meriter Health Services) - Synovial sarcoma
Wisconsin, Milwaukee - Clear cell soft part sarcoma
Wisconsin (St. Mary's Hospital Medical Center) - Merkel cell tumor
Australia (North Queensland Pathology Group) - Primitive neuroectodermal tumor (PNET) differential diagnosis embryonal rhabdomyosarcoma
Australia (Royal Prince Alfred Hospital) - Extraskkeletal Ewing's sarcoma/primitive neuroectodermal tumor
Canada (Foothills Hospital) - Ewing's/PNET
Chile (University of Chile) - Malignant small round cell tumor, needs immunohistochemical stains
Japan (Yamanashi Medical University) - Carcinoid (2); Glomus tumor (1); Clear cell sarcoma (1)
Netherlands, Amsterdam - Merkel cell carcinoma
Saudi Arabia (King Khalid University Hospital Study Group) - Extraskkeletal Ewing's sarcoma

Case 4 - Diagnosis:

Merkel cell carcinoma, skin
 T-01000, M-83953

Case 4 - References:

Brenner B, Sulkes A, Rakowsky E, et al. Second Neoplasms in Patients with Merkel Cell Carcinoma. *Cancer* 2001; 91(7):1358-1362.
 Miettinen M. Keratin 20. Immunohistochemical Marker for Gastrointestinal, Urothelial and Merkel Cell Carcinomas. *Mod Pathol* 1995; 8(4):384-388.
 Gollard R, Weber R, Kosty MP, et al. Merkel Cell Carcinoma. Review of 22 Cases with Surgical, Pathologic, and Therapeutic Considerations. *Cancer* 2000; 88(8):1842-1851.
 Hallman JR, Shaw JA, Geisinger KR, et al. Cytomorphologic Features of Merkel Cell Carcinoma in Fine Needle Aspiration Biopsies. A Study of Two Atypical Cases. *Acta Cytol* 2000; 44(2):185-193.
 Legier JF. Value of Cytokeratin 20 Stain in Merkel-Cell Carcinoma. *Diagn Cytopathol* 1998; 18(4):251-257.
 Vortmeyer AO, Merino MJ, Boni R, et al. Genetic Changes Associated with Primary Merkel Cell Carcinoma. *Am J Clin Pathol* 1998; 109(5):565-570.

Case No. 5, Accession No. 29109

February 2002

Bakersfield - Islet cell tumor
Bay Area - Insulinoma (3)

Fontana (Kaiser Permanente) - Islet cell tumor (insulinoma)
Long Beach - Islet cell tumor/insulinoma (7)
Monterey (Community Hospital of Monterey Peninsula) - Islet cell tumor
Orange (UCI Medical Center Residents) - Insulinoma
Sacramento (UC Davis Medical Center) - Pancreatic endocrine neoplasm
San Diego (Naval Medical Center) - Well-differentiated endocrine tumor (adenoma) (1); Malignant pancreatic endocrine neoplasm (insulinoma) (1)
Santa Rosa - Islet cell tumor (2)
Ventura - Endocrine carcinoma (2)
Alabama (BMC Princeton) - Insulinoma
Arkansas (UAMS) - Pancreatic neuroendocrine carcinoma (insulinoma)
Connecticut (University of Connecticut Health Center) - Islet cell carcinoma with probable insulin production
Delaware (Christiana Hospital) - Islet cell tumor
Florida (Baptist Hospital) - Neuroendocrine tumor of uncertain malignant potential with a trabecular pattern (1); Insulinoma, malignant (1); Endocrine (insulin) carcinoma (1); Islet cell tumor (insulinoma?) (1); Insulinoma of pancreas (malignant islet cell tumor) (1)
Florida (Munroe Regional Medical Center) - Islet cell tumor
Florida (Winter Haven Hospital) - Insulinoma
Illinois (DuPage Pathology Associates) - Pancreas, endocrine carcinoma islet cell tumor (possibly with amyloid stroma, insulinoma) (1); Islet cell tumor, insulinoma with amyloid stroma (1)
Illinois (Evanston Hospital) - Pancreatic endocrine (islet cell) tumor
Illinois (Northwestern Memorial Hospital) - Islet cell tumor (insulinoma)
Illinois (Sarah Bush Lincoln Health Center) - Insulinoma (carcinoid tumor-stain for insulin)
Maryland (Johns Hopkins Hospital Residents) - Pancreatic neuroendocrine carcinoma (1); Malignant islet cell tumor (given metastases), consistent with insulinoma (1)
Maryland (National Naval Medical Center) - Islet cell tumor (insulinoma) (12)
Maryland (Northwest Hospital Center) - Pancreatic endocrine tumor
Massachusetts (Berkshire Medical Center) - Islet cell tumor
Massachusetts (Brigham and Women's Residents) - Pancreatic endocrine neoplasm, likely insulinoma
Massachusetts (New England Medical Center Residents) - Pancreatic islet cell tumor, insulinoma
Michigan (Oakwood Hospital) - Pancreatic endocrine neoplasm
Michigan (St. Joseph Mercy Hospital) - Pancreatic endocrine tumor, grade I, (insulinoma)
Mississippi, Gulfport - Pancreatic endocrine tumor (insulinoma)
New Hampshire, Manchester - Islet cell tumor
New Jersey (Overlook Hospital) - Malignant islet cell tumor (4)
New York (Long Island Jewish Medical Center) - Insulinoma
New York (Nassau County Medical Center) - Pancreatic endocrine neoplasm
New York (Stony Brook Residents) - Malignant insulinoma
North Carolina (St Joseph Hospital) - Islet cell tumor (4)
Oklahoma, South Tulsa - Pancreatic (islet cell) endocrine carcinoma
Pennsylvania (Allegheny General Hospital) - Well-differentiated endocrine carcinoma
Pennsylvania (Lehigh Valley Hospital) - Insulinoma
Pennsylvania (Memorial Medical Center) - Insulinoma
Puerto Rico (University of Puerto Rico) - Islet cell carcinoma
Texas (Brooke Army Medical Center) - Malignant insulinoma
Texas (Propath Services) - Insulinoma (islet cell tumor) (1); Pancreatic endocrine neoplasm (insulinoma) (1)
Texas (Scott & White Memorial Hospital) - Pancreatic islet cell tumor
Texas, Victoria - Islet cell tumor (insulinoma)
Vermont (Fletcher Allen Healthcare Center) - Insulinoma
Washington, Steilacoom - Malignant insulinoma
West Virginia (Greenbrier Valley Medical Center) - Pancreatic endocrine carcinoma
Wisconsin (Meriter Health Services) - Pancreatic endocrine neoplasm, islet cell type
Wisconsin, Milwaukee - Islet cell tumor
Wisconsin (St. Mary's Hospital Medical Center) - Insulinoma

Australia (North Queensland Pathology Group) - Pancreatic glucagonoma
Australia (Royal Prince Alfred Hospital) - Pancreatic endocrine tumor (probably glucagonoma)
Canada (Foothills Hospital) - Pancreatic endocrine neoplasm (insulinoma)
Chile (University of Chile) - Insulinoma
Japan (Yamanashi Medical University) - Insulinoma (4)
Netherlands, Amsterdam - Insulinoma
Saudi Arabia (King Khalid University Hospital Study Group) - Insulinoma of the pancreas

Case 5 - Diagnosis:

Malignant pancreatic endocrine tumor (“insulinoma”), pancreas
 Director’s Note: Regional lymph nodes showed metastatic disease (drc)
 T-59000, M-81513

Case 5 - References:

Veenhof CH. Pancreatic Endocrine Tumours, Immunotherapy and Gene Therapy. Chemotherapy and Interferon Therapy of Endocrine Tumours. *Ann Oncol* 1999; 10 Suppl 4:185-187.
 McKenzie KJ, Hind C, Farquharson MA, et al. Demonstration of Insulin Production and Storage in Insulinomas by In-Situ Hybridization and Immunocytochemistry. *J Pathol* 1997; 181(2):218-222.
 Lloyd RV. Utility of Ki-67 as a Prognostic Marker in Pancreatic Endocrine Neoplasms. *Am J Clin Pathol* 1998; 109(3):286-293.

Case No. 6, Accession No. 29349

February 2002

Bakersfield - Carcinoid tumor
Bay Area - Carcinoid (2); Atypical carcinoid (1)
Fontana (Kaiser Permanente) - Carcinoid tumor
Long Beach - Carcinoid (7)
Monterey (Community Hospital of Monterey Peninsula) - Carcinoid
Orange (UCI Medical Center Residents) - Carcinoid
Sacramento (UC Davis Medical Center) - Atypical carcinoid
San Diego (Naval Medical Center) - Atypical carcinoid (>2 mits/10hpf) (1); Atypical carcinoid (11); Carcinoid (1)
Santa Rosa - Carcinoid (2)
Ventura - Carcinoid (2)
Alabama (BMC Princeton) - Pulmonary carcinoid
Arkansas (UAMS) - Bronchial carcinoid (mature carcinoid)
Connecticut (University of Connecticut Health Center) - Bronchial carcinoid
Delaware (Christiana Hospital) - Carcinoid
Florida (Baptist Hospital) - Carcinoid tumor (2); Atypical carcinoid tumor (3)
Florida (Munroe Regional Medical Center) - Atypical carcinoid tumor
Florida (Winter Haven Hospital) - Carcinoid
Illinois (DuPage Pathology Associates) - Carcinoid tumor, lung (2)
Illinois (Evanston Hospital) - Carcinoid
Illinois (Northwestern Memorial Hospital) - Carcinoid tumor
Illinois (Sarah Bush Lincoln Health Center) - Carcinoid tumor
Maryland (Johns Hopkins Hospital Residents) - Atypical carcinoid tumor/intermediate grade neuroendocrine (1); Carcinoid tumor (1)
Maryland (National Naval Medical Center) - Carcinoid tumor (8); Atypical carcinoid tumor (2)
Maryland (Northwest Hospital Center) - Carcinoid
Massachusetts (Berkshire Medical Center) - Carcinoid tumor
Massachusetts (Brigham and Women’s Residents) - Atypical carcinoid tumor
Massachusetts (New England Medical Center Residents) - Carcinoid
Michigan (Oakwood Hospital) - Carcinoid
Michigan (St. Joseph Mercy Hospital) - Atypical carcinoid

Mississippi, Gulfport - Carcinoid
New Hampshire, Manchester - Atypical carcinoid tumor
New Jersey (Overlook Hospital) - Carcinoid (3); Atypical carcinoid (1)
New York (Long Island Jewish Medical Center) - Lung, carcinoid tumor
New York (Nassau County Medical Center) - Carcinoid tumor, lung
New York (Stony Brook Residents) - Central carcinoid tumor
North Carolina (St Joseph Hospital) - Carcinoid tumor, typical (4)
Oklahoma, South Tulsa - Carcinoid tumor, atypical
Pennsylvania (Allegheny General Hospital) - Carcinoid
Pennsylvania (Lehigh Valley Hospital) - Carcinoid
Pennsylvania (Memorial Medical Center) - Carcinoid tumor
Puerto Rico (University of Puerto Rico) - Carcinoid tumor
Texas (Brooke Army Medical Center) - Typical carcinoid tumor
Texas (ProPath Services) - Bronchial carcinoid tumor (2)
Texas (Scott & White Memorial Hospital) - Carcinoid
Texas, Victoria - Lung, carcinoid
Vermont (Fletcher Allen Healthcare Center) - Carcinoid tumor
Washington, Steilacoom - Atypical carcinoid
West Virginia (Greenbrier Valley Medical Center) - Bronchial carcinoid
Wisconsin (Meriter Health Services) - Carcinoid tumor/neuroendocrine neoplasm, grade I
Wisconsin, Milwaukee - Carcinoid tumor
Wisconsin (St. Mary's Hospital Medical Center) - Carcinoid tumor
Australia (North Queensland Pathology Group) - Carcinoid
Australia (Royal Prince Alfred Hospital) - Carcinoid tumor
Canada (Foothills Hospital) - Carcinoid tumor
Chile (University of Chile) - Carcinoid
Japan (Yamanashi Medical University) - Typical carcinoid (4)
Netherlands, Amsterdam - Carcinoid
Saudi Arabia (King Khalid University Hospital Study Group) - Carcinoid tumor, well-differentiated neuroendocrine carcinoma

Case 6 - Diagnosis:

Carcinoid tumor, lung
 T-28000, M-82401

Case 6 - References:

Travis WD, Rush W, Flieder DB, et al. Survival Analysis of 200 Pulmonary Neuroendocrine Tumors with Clarification of Criteria for Atypical Carcinoid and Its Separation from Typical Carcinoid. *Am J Surg Pathol* 1998; 22(8):934-944.
 Johansson M, Helm S, Mandahl N, et al. Cytogenetic Analysis of Six Bronchial Carcinoids. *Cancer Genet Cytogenet* 1993; 66:33-38.
 McCaugham BC, Martini N, Bains MS, et al. Bronchial Carcinoids. Review of 124 Cases. *J Thorac Cardiovasc Surg* 1985; 89:8-17.
 McDowell EM, Wilson TS and Trump BF. Atypical Endocrine Tumors of the Lung. *Arch Pathol Lab Med* 1981; 105:20-28.

Case No. 7, Accession No. 28725

February 2002

Bakersfield - Atypical carcinoid tumor
Bay Area - Malignant carcinoid (1); "Oat cell" carcinoma (1); Neuroendocrine carcinoma (1)
Fontana (Kaiser Permanente) - Large cell neuroendocrine carcinoma
Long Beach - Neuroendocrine carcinoma, high grade (7)
Monterey (Community Hospital of Monterey Peninsula) - Neuroendocrine carcinoma, large cell type
Orange (UCI Medical Center Residents) - Neuroendocrine carcinoma
Sacramento (UC Davis Medical Center) - Small cell carcinoma
San Diego (Naval Medical Center) - Neuroendocrine carcinoma (1); Large cell neuroendocrine carcinoma (1)

Santa Rosa - Neuroendocrine carcinoma (2)
Ventura - Atypical carcinoid (2)
Alabama (BMC Princeton) - Pulmonary atypical carcinoid
Arkansas (UAMS) - Well-differentiated neuroendocrine carcinoma (atypical carcinoid)
Connecticut (University of Connecticut Health Center) - Malignant carcinoid
Delaware (Christiana Hospital) - Atypical carcinoid
Florida (Baptist Hospital) - Pulmonary endodermal tumor (well-differentiated fetal adenocarcinoma) (1); Atypical carcinoid (1); Large cell neuroendocrine carcinoma (1); Neuroendocrine carcinoma (2)
Florida (Munroe Regional Medical Center) - Large cell neuroendocrine carcinoma
Florida (Winter Haven Hospital) - Malignant carcinoid
Illinois (DuPage Pathology Associates) - Atypical carcinoid tumor, lung (2)
Illinois (Evanston Hospital) - Atypical carcinoid
Illinois (Northwestern Memorial Hospital) - Atypical carcinoid
Illinois (Sarah Bush Lincoln Health Center) - Neuroendocrine carcinoma, large cell type
Maryland (Johns Hopkins Hospital Residents) - Large cell neuroendocrine carcinoma (2)
Maryland (National Naval Medical Center) - Large cell neuroendocrine carcinoma (12)
Maryland (Northwest Hospital Center) - Atypical carcinoid
Massachusetts (Berkshire Medical Center) - Atypical carcinoid tumor
Massachusetts (Brigham and Women's Residents) - Large cell neuroendocrine carcinoma
Massachusetts (New England Medical Center Residents) - Moderately differentiated neuroendocrine tumor/atypical carcinoid
Michigan (Oakwood Hospital) - Neuroendocrine carcinoma at least grade 2 (atypical carcinoid)
Michigan (St. Joseph Mercy Hospital) - Large cell neuroendocrine carcinoma
Mississippi, Gulfport - Atypical carcinoid
New Hampshire, Manchester - Neuroendocrine carcinoma
New Jersey (Overlook Hospital) - Atypical carcinoid (3); Neuroendocrine carcinoma, intermediate cell type
New York (Long Island Jewish Medical Center) - Neuroendocrine carcinoma
New York (Nassau County Medical Center) - Large cell neuroendocrine tumor, lung
New York (Stony Brook Residents) - Large cell neuroendocrine carcinoma
North Carolina (St Joseph Hospital) - Large cell neuroendocrine carcinoma (4)
Oklahoma, South Tulsa - Atypical carcinoid tumor
Pennsylvania (Allegheny General Hospital) - Large cell neuroendocrine carcinoma
Pennsylvania (Lehigh Valley Hospital) - Intermediate variant of small cell carcinoma
Pennsylvania (Memorial Medical Center) - Small cell carcinoma
Puerto Rico (University of Puerto Rico) - Large cell neuroendocrine carcinoma
Texas (Brooke Army Medical Center) - Small cell carcinoma
Texas (ProPath Services) - Bronchial carcinoid (atypical) (2)
Texas (Scott & White Memorial Hospital) - Large cell neuroendocrine carcinoma
Texas, Victoria - Lung, atypical carcinoid
Vermont (Fletcher Allen Healthcare Center) - Carcinoid tumor
Washington, Steilacoom - Large cell neuroendocrine carcinoma
West Virginia (Greenbrier Valley Medical Center) - Small cell carcinoma
Wisconsin (Meriter Health Services) - Atypical carcinoid tumor/neuroendocrine neoplasm, grade II
Wisconsin, Milwaukee - Large cell neuroendocrine tumor
Wisconsin (St. Mary's Hospital Medical Center) - Pheochromocytoma
Australia (North Queensland Pathology Group) - Malignant carcinoid
Australia (Royal Prince Alfred Hospital) - Large cell neuroendocrine carcinoma
Canada (Foothills Hospital) - Large cell neuroendocrine carcinoma
Chile (University of Chile) - Atypical carcinoid
Japan (Yamanashi Medical University) - Atypical carcinoid (3); Large cell neuroendocrine carcinoma (1)
Netherlands, Amsterdam - Atypical carcinoid
Saudi Arabia (King Khalid University Hospital Study Group) - Neuroendocrine carcinoma, moderately differentiated

Case 7 - Diagnosis:

Large cell neuroendocrine carcinoma, lung
T-28000, M-80123

Case 7 – References:

- Travis WD, Linnoila RI, Tsokas MG, et al. Neuroendocrine Tumors of the Lung with Proposed Criteria for Large-Cell Neuroendocrine Carcinoma. An Ultrastructural Immunohistochemical, and Flow Cytometric Study of 35 Cases. *Am J Surg Pathol* 1991; 15:529-530.
- Dresler CM, Ritter JH, Patterson GA, et al. Clinical-Pathologic Analysis of 40 Patients with Large Cell Neuroendocrine Carcinoma of the Lung. *Ann Thorac Surg* 1997; 63(1):180-185.
- Onuki N, Wistuba II, Travis WD, et al. Genetic Changes in the Spectrum of Neuroendocrine Lung Tumors. *Cancer* 1999; 85(3):600-607.

Case No. 8, Accession No. 29119

February 2002

Bakersfield - Pheochromocytoma
Bay Area - Pheochromocytoma (3)
Fontana (Kaiser Permanente) - Pheochromocytoma
Long Beach - Pheochromocytoma (7)
Monterey (Community Hospital of Monterey Peninsula) - Pheochromocytoma
Orange (UCI Medical Center Residents) - Pheochromocytoma
Sacramento (UC Davis Medical Center) - Pheochromocytoma
San Diego (Naval Medical Center) - Pheochromocytoma (2)
Santa Rosa - Pheochromocytoma (2)
Ventura - Pheochromocytoma (2)
Alabama (BMC Princeton) - Pheochromocytoma
Arkansas (UAMS) - Pheochromocytoma
Connecticut (University of Connecticut Health Center) - Pheochromocytoma
Delaware (Christiana Hospital) - Pheochromocytoma
Florida (Baptist Hospital) - Pheochromocytoma (5)
Florida (Munroe Regional Medical Center) - Pheochromocytoma
Florida (Winter Haven Hospital) - Pheochromocytoma
Illinois (DuPage Pathology Associates) - Adrenal, pheochromocytoma (2)
Illinois (Evanston Hospital) - Pheochromocytoma
Illinois (Northwestern Memorial Hospital) - Pheochromocytoma, benign
Illinois (Sarah Bush Lincoln Health Center) - Pheochromocytoma
Maryland (Johns Hopkins Hospital Residents) - Pheochromocytoma (2)
Maryland (National Naval Medical Center) - Pheochromocytoma (12)
Maryland (Northwest Hospital Center) - Pheochromocytoma
Massachusetts (Berkshire Medical Center) - Pheochromocytoma
Massachusetts (Brigham and Women's Residents) - Pheochromocytoma
Massachusetts (New England Medical Center Residents) - Pheochromocytoma
Michigan (Oakwood Hospital) - Pheochromocytoma
Michigan (St. Joseph Mercy Hospital) - Pheochromocytoma
Mississippi, Gulfport - Pheochromocytoma
New Hampshire, Manchester - Pheochromocytoma
New Jersey (Overlook Hospital) - Pheochromocytoma (4)
New York (Long Island Jewish Medical Center) - Pheochromocytoma
New York (Nassau County Medical Center) - Pheochromocytoma, adrenal
New York (Stony Brook Residents) - Pheochromocytoma
North Carolina (St Joseph Hospital) - Pheochromocytoma (4)
Oklahoma, South Tulsa - Pheochromocytoma
Pennsylvania (Allegheny General Hospital) - Pheochromocytoma
Pennsylvania (Lehigh Valley Hospital) - Pheochromocytoma

Pennsylvania (Memorial Medical Center) - Pheochromocytoma
Puerto Rico (University of Puerto Rico) - Pheochromocytoma
Texas (Brooke Army Medical Center) - Pheochromocytoma
Texas (ProPath Services) - Pheochromocytoma (2)
Texas (Scott & White Memorial Hospital) - Pheochromocytoma
Texas, Victoria - Adrenal paraganglioma
Vermont (Fletcher Allen Healthcare Center) - Pheochromocytoma
Washington, Steilacoom - Pheochromocytoma
West Virginia (Greenbrier Valley Medical Center) - Pheochromocytoma
Wisconsin (Meriter Health Services) - Pheochromocytoma
Wisconsin, Milwaukee - Pheochromocytoma
Wisconsin (St. Mary's Hospital Medical Center) - Neuroblastoma
Australia (North Queensland Pathology Group) - Pheochromocytoma
Australia (Royal Prince Alfred Hospital) - Pheochromocytoma
Canada (Foothills Hospital) - Pheochromocytoma
Chile (University of Chile) - Pheochromocytoma
Japan (Yamanashi Medical University) - Pheochromocytoma (4)
Netherlands, Amsterdam - Pheochromocytoma
Saudi Arabia (King Khalid University Hospital Study Group) - Pheochromocytoma

Case 8 - Diagnosis:

Pheochromocytoma, adrenal
 T-93020, M-87000

Case 8 – References:

Pacak K, Eisenhofer G, Carrasquillo JA, et al. 6-(18F) Fluorodopamine Positron Emission Tomographic (PET) Scanning for Diagnostic Localization of Pheochromocytoma. *Hypertension* 2001; 38(1):6-8.
 Lam KY, Lo CY, Wat NM, et al. The Clinicopathological Features and Importance of p53, Rb, and mdm2 Expression in Pheochromocytomas and Paragangliomas. *J Clin Pathol* 2001; 54(6):443-448.
 Dannenberg H, Speel EJ, Zhao J, et al. Losses of Chromosomes 1p and 3q are Early Genetic Events in the Development of Sporadic Pheochromocytomas. *Am J Pathol* 2000; 157(2):353-359.
 Lo CY, Lam KY, Wat MS, et al. Adrenal Pheochromocytoma Remains a Frequently Overlooked Diagnosis. *Am J Surg* 2000; 179(3):212-215.
 Juarez D, Brown RW, Ostrowski M, et al. Pheochromocytoma Associated with Neuroendocrine Carcinoma. A New Type of Composite Pheochromocytoma. *Arch Pathol Lab Med* 1999; 123(12):1274-1279.

Case No. 9, Accession No. 12346

February 2002

Bakersfield - Neuroblastoma
Bay Area - Neuroblastoma (3)
Fontana (Kaiser Permanente) - Neuroblastoma
Long Beach - Neuroblastoma (7)
Monterey (Community Hospital of Monterey Peninsula) - Neuroblastoma
Orange (UCI Medical Center Residents) - Neuroblastoma
Sacramento (UC Davis Medical Center) - Neuroblastoma
San Diego (Naval Medical Center) - Neuroblastoma, poorly differentiated (Schwannian stroma-poor) (1); Neuroblastoma (1)
Santa Rosa - Neuroblastoma
Ventura - Neuroblastoma (2)
Alabama (BMC Princeton) - Metastatic neuroblastoma
Arkansas (UAMS) - Neuroblastoma
Connecticut (University of Connecticut Health Center) - High grade neuroblastoma
Delaware (Christiana Hospital) - Neuroblastoma
Florida (Baptist Hospital) - Alveolar embryonal rhabdomyosarcoma (1); Small round cell malignancy, favor neuroblastoma (1); Neuroblastoma (with possible Hutchinson's syndrome) (1) Neuroblastoma (2)

Florida (Munroe Regional Medical Center) - Neuroblastoma
Florida (Winter Haven Hospital) - Neuroblastoma
Illinois (DuPage Pathology Associates) - Neuroblastoma, adrenal (2)
Illinois (Evanston Hospital) - Neuroblastoma
Illinois (Northwestern Memorial Hospital) - Neuroblastoma
Illinois (Sarah Bush Lincoln Health Center) - Neuroblastoma, well-differentiated
Maryland (Johns Hopkins Hospital Residents) - Neuroblastoma (1); Neuroblastoma, Shimada unfavorable stroma-poor subgroup (1)
Maryland (National Naval Medical Center) - Neuroblastoma (12)
Maryland (Northwest Hospital Center) - Neuroblastoma
Massachusetts (Berkshire Medical Center) - Neuroblastoma
Massachusetts (Brigham and Women's Residents) - Neuroblastoma
Massachusetts (New England Medical Center Residents) - Neuroblastoma
Michigan (Oakwood Hospital) - Neuroblastoma, stroma poor
Michigan (St. Joseph Mercy Hospital) - Neuroblastoma
Mississippi, Gulfport - Neuroblastoma
New Hampshire, Manchester - Neuroblastoma
New Jersey (Overlook Hospital) - Neuroblastoma (4)
New York (Long Island Jewish Medical Center) - Neuroblastoma, stromal poor type
New York (Nassau County Medical Center) - Neuroblastoma, adrenal
New York (Stony Brook Residents) - Neuroblastoma
North Carolina (St Joseph Hospital) - Neuroblastoma (4)
Oklahoma, South Tulsa - Neuroblastoma, undifferentiated, stroma poor
Pennsylvania (Allegheny General Hospital) - Neuroblastoma
Pennsylvania (Lehigh Valley Hospital) - PNET
Pennsylvania (Memorial Medical Center) - Neuroblastoma
Puerto Rico (University of Puerto Rico) - Neuroblastoma
Texas (Brooke Army Medical Center) - Neuroblastoma (2)
Texas (ProPath Services) - Neuroblastoma (2)
Texas (Scott & White Memorial Hospital) - Neuroblastoma
Texas, Victoria - Composite ganglioneuroblastoma
Vermont (Fletcher Allen Healthcare Center) - Neuroblastoma
Washington, Steilacoom - Neuroblastoma
West Virginia (Greenbrier Valley Medical Center) - Neuroblastoma
Wisconsin (Meriter Health Services) - Neuroblastoma
Wisconsin, Milwaukee - Neuroblastoma
Wisconsin (St. Mary's Hospital Medical Center) - Neuroblastoma
Australia (North Queensland Pathology Group) - Neuroblastoma
Australia (Royal Prince Alfred Hospital) - Neuroblastoma
Canada (Foothills Hospital) - Neuroblastoma
Chile (University of Chile) - Neuroblastoma
Japan (Yamanashi Medical University) - Ganglioneuroblastoma (2); Neuroblastoma (2)
Netherlands, Amsterdam - Neuroblastoma
Saudi Arabia (King Khalid University Hospital Study Group) - Neuroblastoma

Case 9 - Diagnosis:

Neuroblastoma, adrenal
 T-93000, M-95003

Case 9 – References:

Lack, Ernest E. *Atlas of Tumor Pathology*, Third Series Fascicle 19. Tumors of the Adrenal Gland and Extra-Adrenal Paraganglia. *Armed Forces Institute of Pathology*, Washington, D.C. 1997; 411-464.
 Kramer K, Kushner B, Heller G, et al. Neuroblastoma Metastatic to the Central Nervous System. The Memorial Sloan-Kettering Center Experience and a Literature Review. *Cancer* 2001; 91(8):1510-1519.
 Nadler EP and Barksdale EM. Adrenal Masses in the Newborn. *Semin Pediatr Surg* 2000; 9(3):156-164.

Shimada H, Ambros IM, Dehner LP, et al. The International Neuroblastoma Pathology Classification (the Shimada System). *Cancer* 1999; 86(2):364-372.

Shimada H, Ambros IM, Dehner LP, et al. Terminology and Morphologic Criteria of Neuroblastic Tumors. Recommendations by the International Neuroblastoma Pathology Committee. *Cancer* 1999; 86(2):349-363.

Case No. 10, Accession No. 23336

February 2002

Bakersfield - Endocrine neoplasm

Bay Area - Islet cell tumor, malignant (2); Endocrine neoplasm, NOS (1)

Fontana (Kaiser Permanente) - Pancreatic carcinoma (? mixed endocrine, exocrine tumor)

Long Beach - Islet cell tumor (7)

Monterey (Community Hospital of Monterey Peninsula) - Acinar cell carcinoma

Orange (UCI Medical Center Residents) - Gangliocytic paraganglioma

Sacramento (UC Davis Medical Center) - Pancreatic endocrine neoplasm, cystic type

San Diego (Naval Medical Center) - Endocrine neoplasm with neuro-invasion, favor carcinoma (1); Pancreatic endocrine neoplasm, favor malignant (1)

Santa Rosa - Nonchromaffin paraganglioma (2)

Ventura - Islet cell adenoma (2)

Alabama (BMC Princeton) - Islet cell tumor

Arkansas (UAMS) - Pancreatic neuroendocrine carcinoma

Connecticut (University of Connecticut Health Center) - Islet cell carcinoma

Delaware (Christiana Hospital) - Paraganglioma

Florida (Baptist Hospital) - Neuroendocrine tumor of the pancreas, favor somatostatinous (1); Neuroendocrine tumor/islet cell tumor (1); Endocrine tumor (1); Endocrine tumor carcinoma, somatostatinous (1); Islet cell tumor (1)

Florida (Munroe Regional Medical Center) - Paraganglioma

Florida (Winter Haven Hospital) - Paraganglioma

Illinois (DuPage Pathology Associates) - Solid-pseudopapillary tumor vs. endocrine carcinoma, pancreas (1); Endocrine carcinoma, low grade (1)

Illinois (Evanston Hospital) - Pancreatic endocrine tumor vs. paraganglioma

Illinois (Northwestern Memorial Hospital) - Paraganglioma

Illinois (Sarah Bush Lincoln Health Center) - Solid-pseudopapillary tumor

Maryland (Johns Hopkins Hospital Residents) - Malignant duodenal carcinoid tumor (1); Paraganglioma vs. pancreatic neuroendocrine tumor, could stain for pancreatic hormones and for S-100 positive sustentacular cells to differentiate (1)

Maryland (National Naval Medical Center) - Mixed acinar/islet cell tumor (10); Neuroendocrine neoplasm, NOS (2)

Maryland (Northwest Hospital Center) - Pancreatic oncocytic malignant tumor vs. oncocytic pancreatic endocrine tumor

Massachusetts (Berkshire Medical Center) - Islet cell tumor

Massachusetts (Brigham and Women's Residents) - Pancreatic endocrine neoplasm

Massachusetts (New England Medical Center Residents) - Malignant pancreatic neuroendocrine tumor

Michigan (Oakwood Hospital) - Pancreatic endocrine tumor

Michigan (St. Joseph Mercy Hospital) - Carcinoid

Mississippi, Gulfport - Pancreatic endocrine tumor

New Hampshire, Manchester - Solid cystic papillary epithelial neoplasm

New Jersey (Overlook Hospital) - Islet cell tumor (2); Pseudopapillary tumor (1); Acinar cell tumor (1)

New York (Long Island Jewish Medical Center) - Favor islet cell tumor

New York (Nassau County Medical Center) - Pancreatic endocrine neoplasm

New York (Stony Brook Residents) - Carcinoid tumor

North Carolina (St Joseph Hospital) - Islet cell tumor (2); Islet cell tumor, ? paraganglioma (1); Pancreatic endocrine neoplasm "islet cell tumor" (1)

Oklahoma, South Tulsa - Pancreatic endocrine (islet cell) tumor

Pennsylvania (Allegheny General Hospital) - Poorly differentiated endocrine carcinoma

Pennsylvania (Lehigh Valley Hospital) - Endocrine tumor of pancreas

Pennsylvania (Memorial Medical Center) - Pancreatic neuroendocrine neoplasm

Puerto Rico (University of Puerto Rico) - Neuroendocrine tumor

Texas (Brooke Army Medical Center) - Malignant solid pseudo-papillary tumor
Texas (ProPath Services) - Malignant islet cell tumor (glucagonoma) (2)
Texas (Scott & White Memorial Hospital) - Pancreatic islet cell tumor
Texas, Victoria - Gangliocytic paraganglioma
Vermont (Fletcher Allen Healthcare Center) - Islet cell tumor
Washington, Steilacoom - Low grade pancreatic endocrine tumor
West Virginia (Greenbrier Valley Medical Center) - Gastrinoma
Wisconsin (Meriter Health Services) - Gangliocytic paraganglioma
Wisconsin, Milwaukee - Carcinoid tumor
Wisconsin (St. Mary's Hospital Medical Center) - Pancreatic neuroendocrine tumor
Australia (North Queensland Pathology Group) - Endocrine carcinoma
Australia (Royal Prince Alfred Hospital) - Pancreatic endocrine tumor
Canada (Foothills Hospital) - Pancreatic endocrine neoplasm
Chile (University of Chile) - Solid cystic epithelial tumor of pancreas
Japan (Yamanashi Medical University) - Malignant islet cell tumor (1); Solid cystic tumor (3)
Netherlands, Amsterdam - Pancreatic endocrine tumor, NOS
Saudi Arabia (King Khalid University Hospital Study Group) - Neuroendocrine tumor with oncocytic features

Case 10 - Diagnosis:

Malignant pancreatic endocrine neoplasm

Directors Note: Regional lymph nodes were positive for metastatic disease (drc)

T-59000, M-80003

Case 10 - References:

- Balci NC and Semelka RC. Radiologic Features of Cystic, Endocrine and Other Pancreatic Neoplasms. *Eur J Radiol* 2001; 38(2):113-119.
- Mukai K, Grotting JC, Greider MH, et al. Retrospective Study of 77 Pancreatic Endocrine Tumors Using Immunoperoxidase Method. *Am J Surg Pathol* 1982; 6(5):387-399.
- Venkatesh S, Ordonez NG, Ajani J, et al. Islet Cell Carcinoma of the Pancreas. A Study of 98 Patients. *Cancer* 1990; 65(2):354-357.
- Kimura N, Kuroda A and Marioka Y. Clinical Pathology of Endocrine Tumors of the Pancreas. Analysis of Autopsy Cases. *Dig Dis Sci* 1991; 36(7):933-942.