Pediatric Pathology Grossing Guidelines

When you get a case that should/could be for Pediatric Pathology, show it to the gross room supervisor or page Dr. Goldstein at 31418 before you cut it in. If it is the weekend or late at night, page the on-call attending to discuss the case. If Dr. Goldstein is not available during the day, page the person who is covering Pediatric Pathology, or the appropriate “organ-service” pathologist. It does not matter how trivial you feel the case is; if it is trivial, a simple discussion will confirm your assessment and you can proceed unabated. If, however, it appears not to be trivial, it can be a great learning experience for you and provide better care for your patient.

Special Considerations

UCLA is a participating member of the Children's Oncology Group (COG) and a tissue bank for pediatric neoplasms maintained at the COG Biopathology Center (BPC) at Nationwide Children’s Hospital/Ohio State University. Clinical protocols change all the time and the following tumors have or still require special tissue handling: Wilms Tumor, neuroblastoma, rhabdomyosarcoma, lymphoma, germ cell tumors, and malignant brain tumors. Many pediatric oncology patients will be randomized into therapeutic protocols. Since the protocols and trial studies are in flux, better to check if any special things need to be done BEFORE proceeding with cases in these categories or other situations that may seem unusual or rare (which occurs in pediatric-aged patients!)

All COG treatment protocols require central pathology review, and in some cases, an expedited rapid review is necessary to determine the correct initial treatment regimen for the child. Therefore, for all children registered on protocol, a complete duplicate set of sequential slides from each block should be ordered at the time of initial histologic processing.

For all pediatric tumors for which there is sufficient material available, after satisfying protocol requirements and our needs (including our TPCL), additional frozen tissue can be submitted to the BPC. TPCL personnel will be available during regular work hours to assist with the procurement of tissue for COG protocols and tissue banking.
Specimen Procurement Kit (NOTE: This is used sporadically, not all cases!):
A special biology kit for pediatric tumors may be available in the for pediatric
tumors to be sent to BPC. Usually, it is provided by request, typically from
the Peds Heme/Onc team relayed to Dr. Goldstein or a service attending, who
will contact you in the event this is needed. A kit may be obtained by calling
the Peds Heme/Onc Clinical Research Associate (CRA) through their office,
x56708. The kit is equipped with:

1. plastic tubes or aluminum for frozen tissue
2. truncated embedding molds for tumor frozen in OCT
3. formalin containers for fixed tissue
4. charged slides for touch imprints
5. culture tube with media for fresh tumor with separate
   mailing container
6. pre-printed Federal Express airbill
7. kit instructions, Specimen Transmittal Form, reimbursement
   invoice, Biohazard sticker, dry-ice label and a Federal
   Express sticker for Saturday Delivery

Additionally, a laminated wall chart is posted in the cutting area which illustrates
how tissue should be processed using this special kit. The details for usage of kit
materials is described in the instructions accompanying the kit.

Certain pediatric tumor cases have specialized diagnostic terms and criteria that
assist decisions with treatment and protocol enrollment. These include
neuroblastoma, Wilms tumor, hepatoblastoma, Ewing sarcoma/PNET and
potentially other tumors, such as rhabdomyosarcoma, germ cell neoplasms and
leukemias/lymphomas. College of American Pathologists’ pediatric tumor
synoptic reports should be used, when applicable, and the full CAP protocols may
be reviewed for additional information. Synoptic reports should be used for other
tumors that occur in children and adolescents. For pediatric solid tumors not
signed out by Dr. Goldstein, outside review and consultation may be required
based upon a discussion with your signout attending.

Inquiries related to any pediatric tumor are to be directed to:

1. Jeffrey Goldstein, M.D., x57443, Beeper 31418;
2. The Hematopathology and Neuropathology fellow or attending-on-
   call, for those cases.
3. Peds Heme/Onc Clinical Research Associate (CRA), x56708.
4. The Peds Heme/Onc Fellow at x56708, or the page operator for the
   fellow on-call
5. Noah Federman p21525 or x56708 for solid tumor service and
   William May (leukemia/lymphoma) office x56708 pager 10205.
**Chromosomal Analysis**

It is advisable to save the tissue for chromosomal and/or molecular analysis of the following neoplastic disorders:

1. Wilms tumor
2. Neuroblastoma
3. Rhabdomyosarcoma (especially alveolar subtype)
4. Ewing’s sarcoma/PNET/Demoplastic small round cell tumor
5. Burkitt and other non-Hodgkin lymphomas
6. Acute leukemia and granulocytic sarcoma
7. Germ cell tumors
8. Malignant brain tumors
9. Synovial sarcoma
10. Any rare, unusual or undiagnosed pediatric tumor

If chromosome analysis is needed on any pediatric tumor, obtain **RPMI medium** from tubes provided by the Flow Cytometry Laboratory in the Surgical Pathology refrigerator. Alternatively, the Cytogenetics Laboratory (300 Med Plaza, Room 3158) can provide RPMI media. You may call the Cytogenetics Lab at x56678 and they will provide you with the RPMI media. This lab is open Monday through Friday. Please contact Dr. Nagesh Rao (Pgr #92239) for after hours or weekend requests if the Surgical Pathology supply is out or old. Fresh tissue of 2-3 mm size is OK for the study.
Specific Specimen Processing

Each of the following specimens has a unique protocol for processing as outlined below. Please refer to the diagrams attached for grossing illustrations and sample dictations (kindly provided by Dr. Florette K, Gray Hazard, Lucille Packard Children’s Hospital, Stanford University School of Medicine.) “Pilot” sections of tumors obtained prior to fixation may be submitted for next day preview and preliminary diagnosis. Block maps on photographs similar to those in the illustrations are encouraged for large and complex specimens.

NEUROBLASTOMA AND RELATED TUMORS

Specimens may be small biopsies, primary resections or post-treatment resections

1. Describe appearance and dimensions; weigh excisional specimens
2. Photograph larger specimens prior to inking and slicing
3. Submit fresh tissue for cytogenetics and FISH for MYC amplification

4. If the patient is registered on a COG protocol, a portion of the tumor, ideally at least 1g, should be snap-frozen in liquid nitrogen (without OCT). At least one piece of tissue from the primary (if present) and from metastatic areas (if present) should be cut into 3-5 mm slices and wrapped in the foil and snap frozen in the vapor phase of liquid nitrogen (do not submerge the tissue in liquid nitrogen) or isopentane/dry ice. Tissue may also be submitted to our TPCL.

5. For COG protocol patients, optional fresh tissue may be requested.
6. Contact Peds Hem/Onc Clinical Research Associate (CRA), x56708 for distribution of materials.
7. Save small portion for EM.
8. Submit portions for routine histology, after overnight fixation for larger specimens
NEUROBLASTOMA

Pre-treatment
hemorrhagic nodules

Representative sections are taken and submitted:
A1- Tumor (pilot section)
A2-A5- Representative Sections

Sample Gross Template:
Received [without fixative/in formalin] labeled with the patient's name "[#]", medical record number and designated "[***]" is a [***] g, [***x***x***] cm [irregular/round/oval] portion of [red/yellow/tan/brown] soft tissue. It is entirely comprised of tumor [OR it is comprised of tumor and normal-appearing adrenal gland, small bowel, kidney located along the periphery]. The external surface is [intact/disrupted] and [does/does not] show a focus of possible rupture. The external surface is inked [insert color] [and the focus of possible rupture is inked [insert color]]. The specimen is bisected along its longest axis to reveal [homogeneous/heterogeneous], [insert color], [firm, soft] tumoral tissue. Foci of hemorrhage and necrosis [are/are not] present. [If present, describe loca8on:
distributed throughout, along the periphery]. Well-circumscribed, distinct, hemorrhagic nodules [are/are not] present. The tumor [directly abuts/is present # cm from] the inked resection margin. [Photograph the cut surface.] Representative portions of fresh tissue are frozen at -80°C for possible future ancillary studies and portions are submitted in RPMI for cytogenetic analysis. Following fixation, the specimen is serially sectioned to reveal [no additional lesions/additional lesions (describe if present)]. [Photograph any unusual features.]
Liver

Representative sections are taken and submitted:

A1- Tumor (pilot section)
A2  Gallbladder (if attached)
A3  Tumor to resection margin (if segmental resection)
A4  Tumor

Sample Gross Template:

Received [fresh/in formalin] labeled with the patient's name, medical record number and designated "[#]" is a [***]g, ***x***x*** cm [irregular/round/oval] liver [explant/ segmental resection]. The capsule is [intact/disrupted] and [does/does not] show a focus of possible rupture. The gallbladder is [present/not present] [and measures ***x***x***cm.] [If present: It is opened to reveal [insert color], [thick/watery] bile and a [smooth/rough] mucosal surface.] The external surface of the liver is [insert color] and
[smooth/nodular]. [If segmental resection: The resection margin is inked [insert color].] The capsule is inked [insert color] [and the focus of possible rupture is inked [insert color]. The liver is bisected from superior to inferior (coronal plane) through the hepatic vein to reveal [homogeneous/heterogeneous], [insert color], [firm, soft] tumoral tissue. The liver is then serially sectioned showing [#] tumor nodules. The tumor measures [***] x [***] x [***] cm. [If more than one nodule, measure each nodule.] Foci of hemorrhage and necrosis [are/are not] present. [If present, describe location: distributed throughout, along the periphery]. The hepatic vein [is/is not] involved by tumor. Tumor [directly abuts/is present # cm from] the inked resection margin. The uninvolved liver parenchyma is [insert color] and is [unremarkable/diffusely nodular]. Photograph the cut surface.] Representative portions of fresh tissue are frozen at -80C for possible future ancillary studies and portions are submitted in RPMI for cytogenetic analysis. Pilot sections of fresh tumor are submitted in cassettes A1 and A2. Following fixation, representative sections are submitted as described below. [#/No] candidate hilar lymph nodes are identified. [Photograph any unusual features.]