

(seven of 60) with no apparent APC germline mutation. All seven patients had the classical FAP phenotype. Another group<sup>5</sup> was also able to detect large deletions on APC genes in 15% of the mutation-negative classical FAP patients. Interestingly, neither Michils et al<sup>5</sup> or Sieber et al<sup>4</sup> found any whole-gene deletions in their AFAP patients.

Some authors<sup>6</sup> previously reported a case where the patient had AFAP phenotype but had an entire exon 15 deletion. Some other authors<sup>7</sup> reported an AFAP patient who had the entire gene deletion based on cytogenetics. Our case confirms this report and provides further evidence that conventional mutation-detection techniques can be misleading in AFAP patients. In addition, this is the first case of AFAP associated with a renal cell carcinoma. This case also emphasizes the point that patients carrying the same germline mutation can have highly different presentations of the disease because the patient's phenotype is drastically different from that of her family members.

**Robert Chen, Lisen Axell, and Catherine Klein**

University of Colorado Health Sciences Center, Division of Medical Oncology, Aurora, CO

© 2007 by American Society of Clinical Oncology

#### AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

The authors indicated no potential conflicts of interest.

#### REFERENCES

1. Kinzler KW, Nilber MC, Su LK, et al: Identification of FAP locus genes from chromosome 5q21. *Science* 253:661-665, 1991
2. Spirio L, Olschwang S, Groden J, et al: Alleles of the APC gene: An attenuated form of familial polyposis. *Cell* 75:951-957, 1993
3. Hernegger GS, Moore HG, Guillem JG: Attenuated familial adenomatous polyposis: An evolving and poorly understood entity. *Dis Colon Rectum* 45:127-134, 2002
4. Sieber OM, Lamlum H, Crabtree MD, et al: Whole-gene APC deletions cause classical familial adenomatous polyposis, but not attenuated polyposis or "multiple" colorectal adenomas. *Proc Natl Acad Sci U S A* 99:2954-2958, 2002
5. Michils G, Tejpar S, Thoelen R, et al: Large deletions of the APC gene in 15% of mutation-negative patients with classical polyposis (FAP): A Belgian study. *Hum Mut* 25:125-134, 2005
6. Su L, Kohlmann W, Ward P, et al: Different familial adenomatous polyposis phenotypes resulting from deletions of the entire APC exon 15. *Hum Genet* 111:88-95, 2002
7. Pilarski R, Brothman A, Benn P, et al: Attenuated familial adenomatous polyposis in a man with an interstitial deletion of chromosome arm 5q. *Am J Med Genet* 86:321-324, 1999

DOI: 10.1200/JCO.2006.09.4177

## Cholestasis From Malignant Melanoma

A 40-year-old man presented with postprandial pain in the right upper abdominal quadrant, having suffered 3 months earlier from abdominal pain and cramps without fever. Five years previously the patient had undergone an excision of a malignant melanoma on his back (Breslow 3; Clark IV, pT4 cN0 cM0).

Blood analysis showed cholestasis. Abdominal ultrasound revealed no tumor or cause for obstruction. On the axial fused fluorodeoxyglucose positron emission tomography-computed tomography (FDG-PET/CT) image the focal FDG uptake can be located in the bile duct (Fig 1, arrow). Endoscopic retrograde cholangiopancreatography showed a 1.5 cm filiform common bile duct stenosis, which was stented. A brush cytology revealed metastatic melanoma cells. The

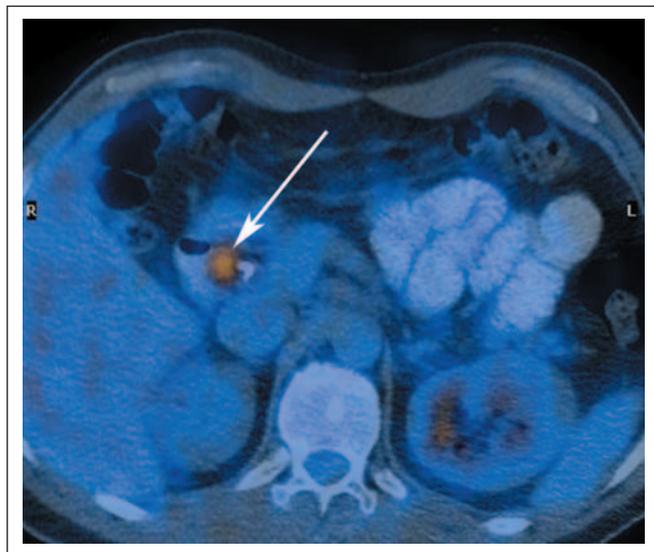


Fig 1.

patient underwent palliative resection of the tumor obstruction at the bile duct.

The malignant melanoma metastasis obstructed the choledochal duct completely (Fig 2). Histologically, the partially diffuse infiltrating neoplastic cells represent high mitotic activity. The cells are very pleomorphic showing partially hyperchromatinated nuclei with prominent nucleoli. Occasionally pigmentation can be seen (Fig 3).

Melanoma metastasis in the bile duct is uncommon, only a few cases have been reported.<sup>1,2</sup> Intra-abdominal metastases are rarely diagnosed clinically, often many years elapse before symptoms appear. Most of malignant melanoma metastases appear occasionally when symptoms like jaundice, hematemesis, or melena occur. Occult visceral metastases are found in 60% of melanoma patients at autopsy while only 5% are diagnosed in lifetime with present imaging techniques.<sup>3</sup> Liver metastases are identified with imaging techniques in only 14% to 20% of patients, but in 54% to 77% of patients by means of autopsy.<sup>4</sup>

Conventional FDG-PET technology already demonstrates high sensitivity (94%) and specificity (83%) especially for soft tissue and is



Fig 2.

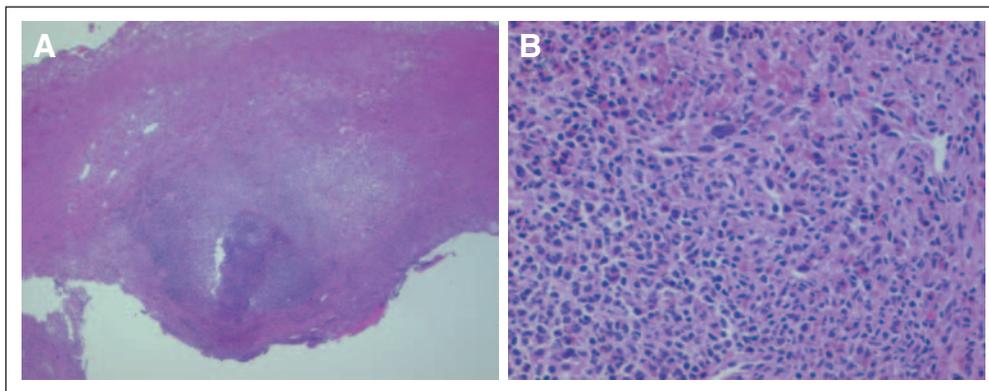


Fig 3.

known to be a useful tool for visceral melanoma metastases.<sup>5</sup> Rinne et al<sup>6</sup> examined 48 melanoma patients with clinical or CT findings suggesting metastatic disease. In this population, a sensitivity, specificity, and accuracy for FDG-PET was found to be 91.8%, 94.4%, and 92.1%, respectively, compared with 57.6%, 45%, and 55.7% for conventional imaging methods.<sup>6</sup> The majority of the available literature suggests that FDG-PET is the most accurate imaging modality for identifying distant metastases in patients at high risk for distant metastasis.<sup>7</sup> The CT data of integrated PET/CT imaging are very helpful in the precise localization of FDG-active lesions and are also used for attenuation correction of emission PET images. Reinhardt et al<sup>8</sup> showed recently that FDG-PET/CT provided high accuracy for noninvasive detection of perihilar cholangiocarcinoma in extra hepatic bile duct strictures.

Integrated PET/CT scanners have become more and more clinically available promising better localization of FDG-active lesions compared with PET alone.<sup>9</sup> In our case, FDG-PET/CT was a valuable tool for preoperative staging as well as for surgical planning. This may also play a role in follow-up surveillance after treatment of invasive melanoma.

#### Matthias Bramkamp and Konstantin J. Dedes

Department of Visceral and Transplantation Surgery, University Hospital, Zurich, Switzerland

#### Klaus Strobel

Department of Medical Radiology/Division of Nuclear Medicine, University Hospital, Zurich, Switzerland

#### Jens Pahnke

Department of Pathology, University Hospital, Zurich, Switzerland

#### Stefan Breitenstein and Pierre-Alain Clavien

Department of Visceral and Transplantation Surgery, University Hospital, Zurich, Switzerland

© 2007 by American Society of Clinical Oncology

#### AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

The authors indicated no potential conflicts of interest.

#### REFERENCES

1. Dasgupta T, Brasfield R: Metastatic melanoma: A clinicopathological study. *Cancer* 17:1323-1339, 1964
2. Garas G, Bramston B, Edmunds SE: Malignant melanoma metastatic to the common bile duct. *J Gastroenterol Hepatol* 15:1348-1351, 2000
3. Patel JK, Didolkar MS, Pickren JW, et al: Metastatic pattern of malignant melanoma: A study of 216 autopsy cases. *Am J Surg* 135:807-810, 1978
4. Bender GN, Magliante DD, McLarney JH, et al: Malignant melanoma: Patterns of metastasis to the small bowel, reliability of imaging studies, and clinical relevance. *Am J Gastroenterol* 96:2392-2400, 2001
5. Holder WD Jr, White RL Jr, Zuger JH, et al: Effectiveness of positron emission tomography for the detection of melanoma metastases. *Ann Surg* 227:764-769, 1998
6. Rinne D, Baum RP, Hor G, et al: Primary staging and follow-up of high risk melanoma patients with whole-body 18F-fluorodeoxyglucose positron emission tomography: Results of a prospective study of 100 patients. *Cancer* 82:1664-1671, 1998
7. Friedman KP, Wahl RL: Clinical use of positron emission tomography in the management of cutaneous melanoma. *Semin Nucl Med* 34:242-253, 2004
8. Reinhardt MJ, Strunk H, Gerhardt T, et al: Detection of Klatskin's tumor in extrahepatic bile duct strictures using delayed 18F-FDG PET/CT: Preliminary results for 22 patient studies. *J Nucl Med* 46:1158-1163, 2005
9. Macapinlac HA: FDG PET and PET/CT imaging in lymphoma and melanoma. *Cancer J* 10:262-270, 2004

DOI: 10.1200/JCO.2006.09.6230

## Recurrent Lymphoma Presenting As Brachial Plexus Neuropathy

A 70-year-old man suffered from a growing mass in his right upper neck for 2 months. A computed tomography (CT) scan showed a mass of 67 × 53 mm in diameter located in right jugular chain and another oval mass in right posterior cervical space. The pathology of biopsy proved to be diffuse large B-cell lymphoma. The initial positron emission tomography (PET) suggested fluorinated deoxyglucose uptake in right neck, right subclavicular, abdominal, and pelvic areas (Fig 1A). There was no bone marrow involvement. The

patient then received immunochemotherapy with rituximab plus cyclophosphamide, adriamycin, vincristine, and prednisolone (CHOP). The lymphoma responded very well to chemotherapy. After four courses of chemotherapy, a CT scan did not find residual lesions. However, this patient began to experience left shoulder and left arm numbness after the sixth course of therapy. The paresthesia exacerbated gradually. Later, the muscle power of his left arm decreased. The electromyography/nerve conduction velocity studies found generalized sensorimotor polyneuropathy of axonal degenerative type, and a drop of nerve conduction velocity of left ulnar nerve that suggested a lesion above the axillary level. A magnetic resonance image found only