

Complementary Information Provided By CT, MRI And FDG PET In Hepatic Metastases

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Citation

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Abstract

The American Cancer Society estimates that there will be 105,500 new cases of colon cancer diagnosed in 2003 with 57,100 deaths from cancer of the colon and rectum. The 5 year survival rate for patients with distant metastases is 9%. However, survival may be prolonged with treatment of hepatic metastases. F-18 FDG is useful for staging or re-staging of colon cancer. It may reveal metastatic lesions not visible on CT scan. A case is presented where F-18 FDG PET scan reveals a large metastatic liver lesion not visualized on CT scan but seen on subsequent MRI.

CASE REPORT

A 72-year-old woman presented with the complaint of blood in her stool. She subsequently had a colon cancer resected but a short time later developed a left hepatic lobe metastasis resulting in a left lobe hepatectomy. Approximately 3 years later, her CEA was noted to be elevated and the patient was referred for a CT scan. This revealed no hepatic lesions.

Subsequent FDG PET scan performed approximately two months later demonstrated a large intense area of increased activity within the superior aspect of the right hepatic lobe consistent with a hepatic metastasis.

MRI, performed within a month after the PET scan, demonstrated a large heterogeneous lesion within the central region of the porta hepatis and extending superiorly corresponding to the lesion noted on the PET scan.

Figure 1

Figure 1: CT Scan With Contrast

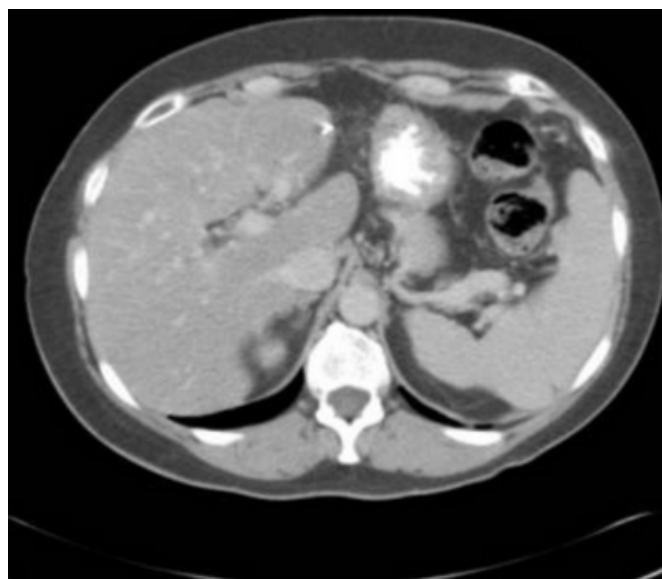


Figure 2

Figure 2: FDG PER Scan

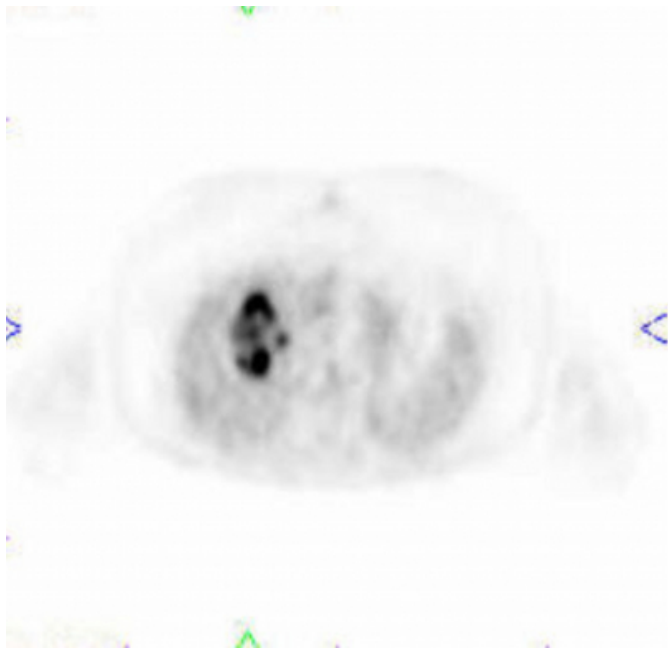


Figure 3

Figure 3: T1 Weighted(SPGR) MRI

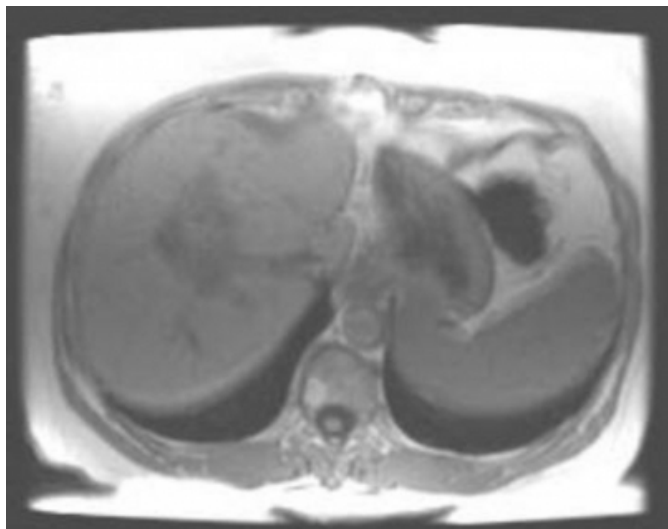
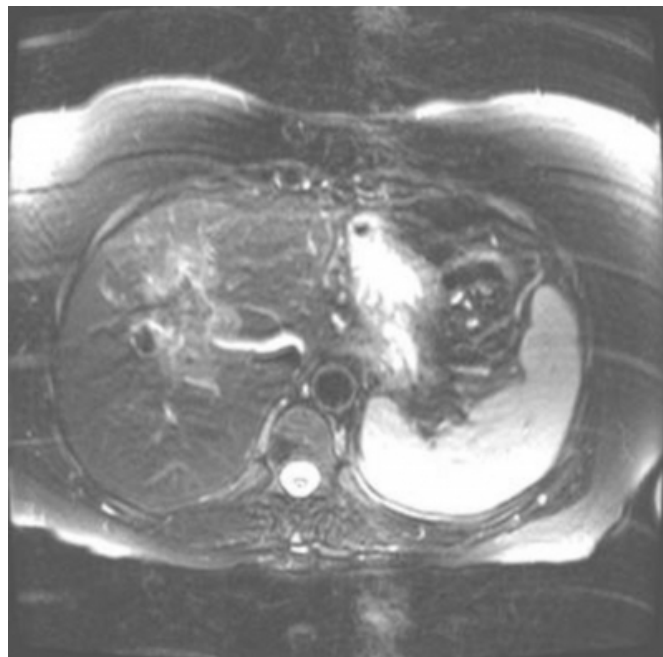


Figure 4

Figure 4: T2 Weighted MRI



DISCUSSION

Meta-analysis comparing ultrasound, CT, MR and PET imaging reveals PET scanning to be the most sensitive noninvasive imaging modality for the detection of hepatic metastases from cancers of the gastrointestinal tract. It is useful to remember that the different imaging modalities demonstrate different parameters. FDG PET scanning images the increased utilization of glucose to detect pathology. CT scanning relies on the distribution of linear attenuation coefficients within the patient expressed as Hounsfield units for the detection of abnormality. MRI, on the other hand, relies on the hydrogen density of a tissue or organ for producing its images. As illustrated in this case, hepatic metastases may have comparable Hounsfield unit measurements compared to the surrounding liver parenchyma but differ markedly in glucose utilization and hydrogen density thus allowing detection by FDG PET and MRI scanning.

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