Clinical Area: **PET for colorectal cancer: Diagnosis and staging**
Keywords: **whole-body PET, colorectal cancer, staging, FDG**
Reference: **Abdel-Nabi H, Doerr RJ, Lamonica DM, Cronin VR, Galantowicz PJ, Carbone GM, Spaulding MB. Staging of primary colorectal carcinomas with fluorine-^{18}fluorodeoxyglucose whole-body PET: Correlation with histopathologic and CT findings. Radiology 1998; 206: 755-760.**

Study Type: Comparison of diagnostic tests
Study Aim:. To evaluate the diagnostic usefulness of PET with FDG in patients with primary colorectal carcinomas.

Outcomes

- *Primary:* Sensitivity, specificity, negative predictive value (NPV)

Design

- *Number of subjects:* N=48
- *Description of study population:* 100% male; mean age=68 ± 10 years; location of tumors: rectum (n=14), sigmoid colon (n=12), rectosigmoid colon (n=7), cecum (n=6), ascending colon (n=5), splenic flexure (n=3) and ileocecal junction (n=1).
- *Inclusion and exclusion criteria:* Inclusion: colorectal cancer (did not use standard definition: 44 had histological diagnosis; 4 had a high clinical suspicion of cancer). No other inclusion criteria or exclusion criteria specified.
- *Power*: Not discussed.

Validity

- *Independent blind comparison with a gold standard or follow-up of those not receiving the gold standard test?* No. There were comparisons to CT, histological and surgical findings, but not for all patients. Results were not interpreted by an independent blinded assessor.
- *Was "normal" defined?* No.
- *Appropriate spectrum of disease?* Appears to be.
- *Consecutive patients?* Yes.
- *Methods described in enough detail to enable you to replicate the test?* Yes, the PET scan.
- *Reproducible results?* Yes.

Conclusions regarding validity of methods:
Threats to validity include:
1) The sample size was small for a diagnostic test validation study.
2) Tests results were unblinded. FDG PET scans were interpreted with knowledge of pertinent clinical information, including the results of CT scans. This tends to overestimate the sensitivity and specificity of PET.

Results

Comparison of FDG PET and CT to histological findings in the detection of intraluminal carcinomas and lymph node and liver metastases

	Sensitivity % (#)	Specificity % (#)	PPV % (#)	NPV % (#)
Primary colorectal carcinoma				
PET	100 (37/37)	43 (3/7)	90 (37/41)	100 (3/3)
CT	37 (11/30)	83 (5/6)	92 (11/12)	21 (5/24)
Lymph node metastases				
PET	29 (4/14)	96 (26/27)	80 (4/5)	72 (26/36)
CT	29 (2/7)	85 (22/26)	33 (2/6)	81 (22/27)
Liver metastases				
PET	88 (7/8)	100 (35/35)	100 (7/7)	97 (35/36)
CT	38 (3/8)	97 (31/32)	75 (3/4)	86 (31/36)

PPV=positive predictive value (the proportion of patients who test positive who actually have the disease); NPV=negative predictive value (the proportion of patients who test negative who actually do not have the disease)

Authors' Conclusions

FDG PET has a high sensitivity and specificity for detection of primary colorectal carcinomas and liver metastases and appears to be superior to CT in the staging of primary colorectal carcinomas.

Reviewer's Conclusions

FDG PET had higher sensitivities and sensitivities than CT but interpretation of PET scans were biased because assessors had access to other clinical information, including CT scan results.