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Commentary

PET and Recurrent Squamous Cell Carcinoma of the Head and Neck: A Surgeon's View

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In this issue of the *American Journal of Neuroradiology,* Fischbein et al (page 1189) review their findings of 35 patients evaluated with PET scans after definitive treatment for squamous cell carcinoma of the upper aerodigestive tract. The data of this retrospective study support their postulate that PET scanning after the administration of 2-fluoro-2-deoxy-D-glucose (FDG) is sensitive but not specific for the detection of recurrent cancer, and that a negative FDG PET scan reliably excludes recurrent disease. How important is this information to the patients who are fighting this cancer and the clinicians who care for them? This study suggests that a negative scan should be reassuring in a patient who is troubled by symptoms that might suggest recurrent tumor. But it is not clear how commonly this occurs, because not all study patients are symptomatic. The more critical and challenging issue is the ability of this imaging procedure to distinguish between recurrent cancer and treatment-related inflamation or fibrosis in patients who become symptomatic or who develop a mass during follow up after definitive cancer therapy. The authors begin with the generally accepted bias that FDG PET is not good at distinguishing inflamation from tumor, and the study design is focused on the procedure, rather than on a specific clinical issue. A prospective study of the value of FDG PET in a group of patients presenting with the above clinical problem (rather than a retrospective study of a group of patients who had the procedure done for various reasons at various times after treatment), might provide information of more use to treating physicians.

The strong negative predictive value identified for this imaging procedure does complement the value of biopsy, which is the standard of reference for a positive diagnosis of recurrent cancer. Patients who have a positive FDG PET scan and a negative biopsy will continue to present a quandary because of the poor positive predictive value of a positive FDG PET scan. Individual patient history is an important factor that is not emphasized in this paper. The timing of signs and symptoms relative to the completion of therapy would be particularly important in this indeterminant group of patients with a positive PET scan and a negative or pending biopsy. Most patients who develop progressive signs and symptoms after feeling relatively well at the completion of therapy will have recurrent cancer. They should undergo repeat biopsy, possibly with the benefit of CT guidance, when it is judged important to establish a definitive diagnosis. It might also be possible to improve the positive predictive value of FDG-PET by pretreating patients with steroids or antibiotics, reducing the false positive rate due to inflamation. This option could be incorporated into the design of the suggested prospective study.

The use of FDG-PET may be especially valuable for the diagnosis of patients symptomatic after radical radiation therapy or combined chemotherapy and radiation for stage III or IV cancer of the larynx, a particularly difficult and common clinical problem. Finally, the cost effectiveness of this expensive imaging procedure must be considered. The introduction of expensive diagnostic tests into clinical practice should be viewed with skepticism until their value is proven. Value combines quality, utility, and cost. At this point, the value of FDG PET for our patients remains unclear.