

결장.직장의 유경성 폴립 감별진단에 도움이 된 ^{18}F -FDG 섭취값 측정: 증례보고

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Usefulness of ^{18}F -FDG Uptake Value Assay in the Differential Diagnosis of the Colorectal Polyp: Case Report

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Of recent ^{18}F -FDG PET/CT is increasingly used not only for the initial diagnosis and staging and restaging of malignant tumors but also for the screening purpose of colorectal polyps and carcinomas.^{1,2)} It is also utilized for clinical and pathological investigations of adenomas³⁾ and villous adenomas⁴⁾ of the colon yielding encouraging results.

PET/CT differential diagnosis of benign from malignant colorectal tumor has mainly been based on two factors, size and ^{18}F -FDG metabolic rate of tumor. Chen et al.²⁾ could detect colonic adenomas exceeding 7 mm in size and distinguish adenoma from carcinoma as FDG uptake value was greater in the latter. Yasuda et al.³⁾ noted that the PET scan positivity rate rose as tumors were 13 mm or more in size. On the other hand, FDG uptake in carcinomas has been shown to vary due to the presence and amount of mucin in tumor. Generally, ^{18}F -FDG uptake value is lower in mucinous carcinomas than in carcinomas without mucin. Berger et al.⁵⁾ related lower FDG uptake to the abundance of mucin and low cellularity. Thus, the consensus is that colorectal tumors that measure 1.5 cm or more in the greatest dimension and accumulate FDG intensely are highly probable of carcinoma. Of the two factors, as observed in mediastinal malignant metastasis by Kang et al.⁶⁾, high maximal standard uptake value (SUVmax)

appeared to be a more predictive parameter in malignant colorectal polyp than tumor size as exemplified in our cases.

We wish to report one case each of benign sigmoid polyp and malignant rectal polyp. Both were pedunculated measuring 1.5 cm and 2.0 cm in the greatest dimension, respectively, and showed increased SUVmax that was calculated as 8.6 and 20.9, respectively. It was of interest that the polyps were better depicted on CT scan through modulation using a personal computer photo shop.

Case presentation

Case 1

A 56-year-old male (#2003-09327) underwent ^{18}F -FDG torso PET/CT scan as a part of health check plan. Unexpectedly, the examination disclosed an intraluminally projecting polyp in the sigmoid colon (Fig. 1A) with moderately increased FDG uptake (SUV=8.6max) (Fig. B). One-hour delay scan showed SUVmax to remain the same as on the initial scan. PET/CT machine used was Biography Duo (Siemens). The initial scan images were obtained 50 min following iv injection of 13.1 mCi ^{18}F -FDG (body weight and height were 61 kg and 164 cm, respectively). Technical factors were 30 mA and 130 kV for topogram and 100 mAs and 130 kV for 4.0-mm-slice spiral CT. Reconstruction slice thickness was 10 mm for torso scan and 5 mm for delayed scan. Scan time for 7-bed imaging of the torso was 21 min. The CT scan images were moderated and modulated so that it could portray the

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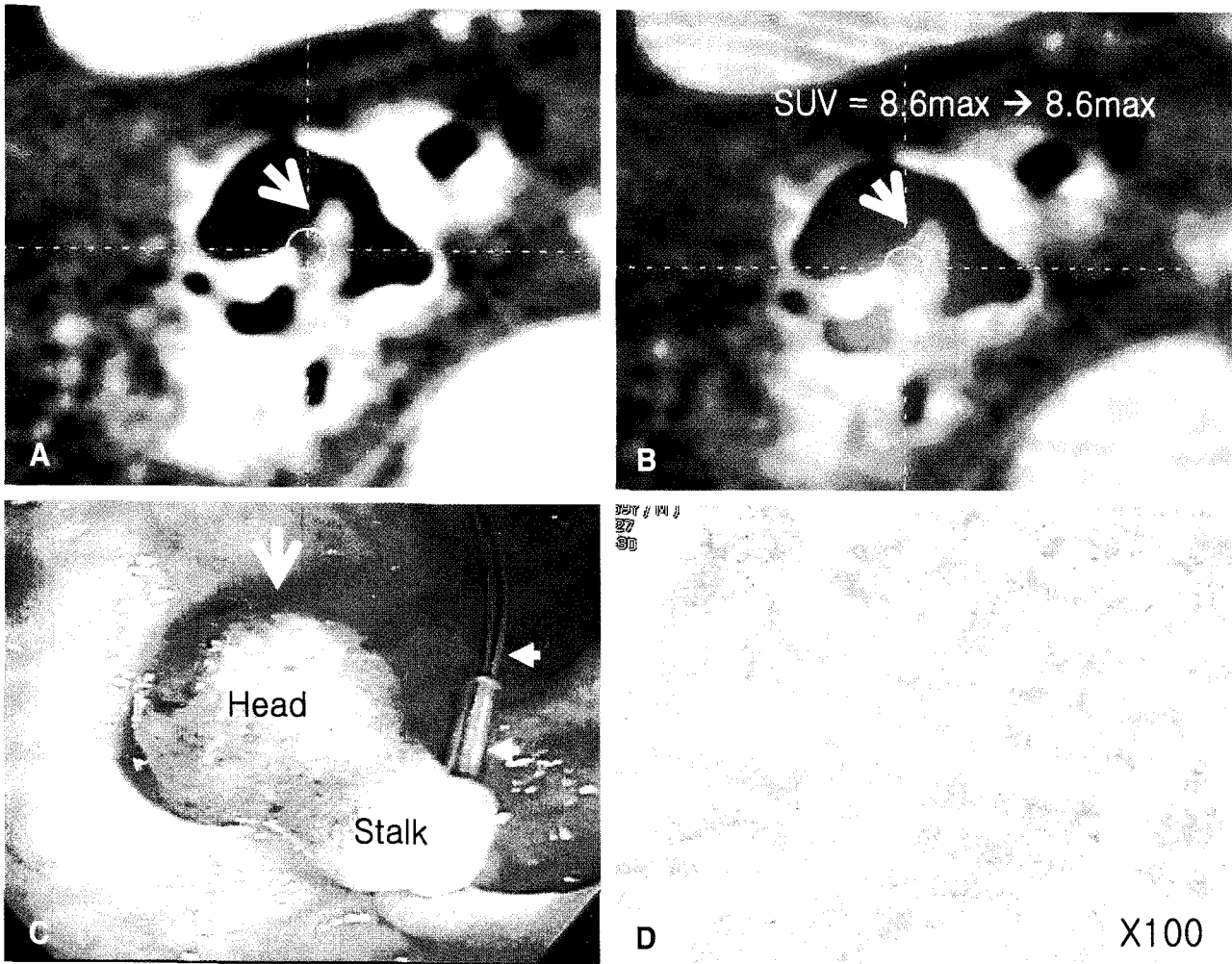


Figure 1. (A) Transverse CT scan of the sigmoid colon shows a pedunculated polyp arising from the inner wall of the sigmoid colon (arrow). (B) PET-CT shows modest ^{18}F -FDG uptake calculated as 8.6max and 8.6max on initial and 1-h-delay scan (arrow). (C) Colonoscopy shows polyp with thick stalk (large arrow) severed from colonic wall using a snare (arrows). (D) Photomicrograph shows tubulo-villous adenoma with moderate dysplasia (H & E Stain $\times 100$).

polyp more realistically using a personal computer provided with an ACD Photo Editor program.

The patient was referred to colonoscopic study and a pedunculated polyp was confirmed to arise from the sigmoid colon wall at the level of 25 cm above the anal verge. The polyp was removed using snare polypectomy. The top of the polyp was bilobulated measuring 1.5 \times 1.5 cm in size and the thick stalk measured 1 cm in length (Fig. 1C). Pathological diagnosis was tubulo-villous adenoma with moderate dysplasia (Fig. 2D).

Case 2.

A 68-year-old female (#2002-08691) underwent ^{18}F -FDG PET/CT scan as a part of health check plan as

in Case 1. PET/CT scan detected a polypoid tumor (Fig. 2A) with extremely high FDG uptake (SUV = 20.9max) in the rectum (Fig. 2B). One-h-delay scan showed a further increase in SUV reaching as high as 30.2max. PET/CT machine and technical factors used were the same as in Case 1 but patient's weight, height and injected FDG were 47 kg, 144 cm and 12.8 mCi, respectively. Colonoscopy confirmed the presence of a pedunculated polyp located at the level of 15 cm above the anal verge. It measured 2.0 cm in the greatest dimension and had a sort, thick stalk. The size and shape were almost the same as in Case 1. The polyp was removed using a snare (Fig. 2C). The pathological diagnosis was moderately differentiated adenocarcinoma with submucosal invasion in

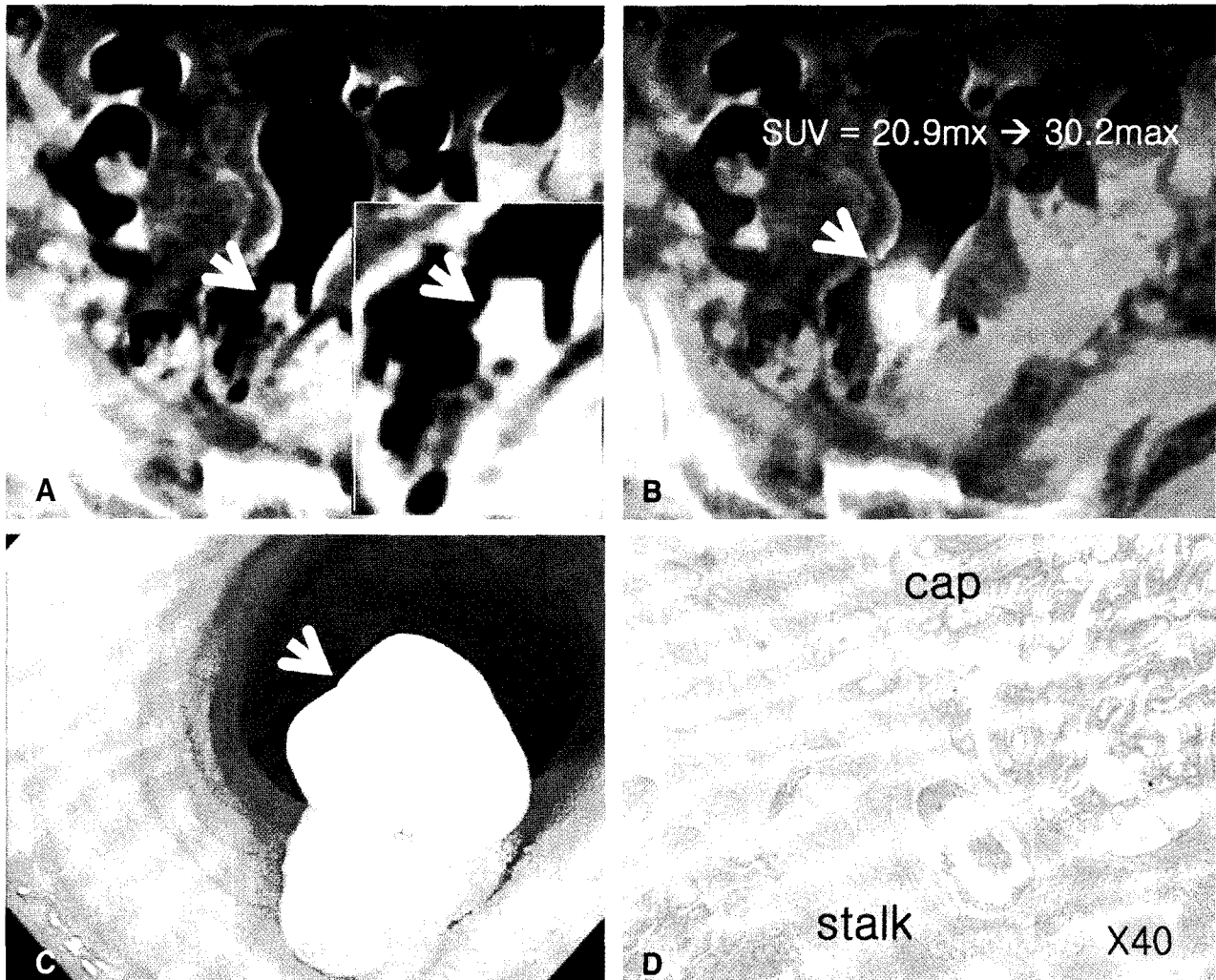


Figure 2. (A) Transverse CT scan of the rectum shows a polyp with thick stalk arising from the inner wall of the rectum (arrow). (B) The maximum ^{18}F -FDG uptake was calculated as 20.9max and 30.2max on initial and 1-h-delay scans, respectively (arrow). (C) Colonoscopy confirms polyp with thick stalk (arrow). (D) Photomicrograph shows moderately differentiated adenocarcinoma with focal submucosal invasion which did not reach the lower stalk (H & E Stain $\times 40$).

the upper stalk but not in the lower portion (Fig. 2D).

Comment

Gross anatomical characteristics of the benign polyp of the sigmoid colon (Fig. 1C) and the malignant polyp of the rectum (Fig. 2C) were identical. The polyp top measured 1.5 cm and 2.0 cm in the greatest dimension, respectively. Both polyps looked like half-earthed mushroom with a thick stalk. As such there were no anatomical features by which benign polyp could be differentiated from malignant one. However, ^{18}F -FDG uptake was modest in the benign polyp but extremely high in the malignant one. The

difference was obvious. Technically, it is worthy mentioning that CT portrayal of polyps was satisfactory in our cases if not perfect. It was achieved by moderation and modulation of scan images using a personal computer provided with an ACD Photo Editor program.

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