

## 칸디다 식도염의 PET-CT 소견

성애의료재단 서울성애병원 핵의학과<sup>1</sup>, 가톨릭의과대학 핵의학과<sup>2</sup>  
박용휘<sup>1</sup> · 오주현<sup>2</sup>

### PET-CT Manifestation of Candida Esophagitis

Yong-Whee Bahk, M.D.<sup>1</sup> and Joo Hyun O, M.D.<sup>2</sup>

<sup>1</sup>Department of Nuclear Medicine, Sung-Ae Hospital and <sup>2</sup>Department of Nuclear Medicine, Kangnam St. Mary's Hospital, Catholic University Medical School, Seoul, Korea

Candida esophagitis (moniliasis) is the most common infection of the gullet and has generally been attributed to as a complication of immune suppressed state. However, as the current case, Holt<sup>1</sup> found the disease to occur in 3 of his 13 patients without predisposing condition. Predisposing factors other than immune deficient conditions include aplastic anemia, alcoholism and Parkinson's disease<sup>1)</sup> and age, diabetes mellitus, and disruption of mucosal integrity.<sup>2)</sup> Growing prevalence of Candida esophagitis in recent years is accounted for by an increase in the number of patients with organ transplantation, malignancy and AIDS<sup>3)</sup> as well as populization of endoscopy. Microorganisms that reached the esophagus in oral secretions are rarely cultured from the esophageal surface. Of many species *C. albicans* is the most common offender although *C. tropicalis* has also been isolated with high prevalence, particularly in the patients with cancer and disseminated candidiasis.<sup>4)</sup>

Clinically, the patients with Candida esophagitis seek medical care for esophageal or retrosternal pain, dysphagia or distress. Candida esophagitis may be the extension from oropharyngeal infection but in the majority the esophagus is the sole site of infection. The middle and lower thirds of the esophagus are more typically affected than the upper third.<sup>5)</sup> Diagnosis can be indicated by double contrast esophagography or endoscopy and confirmed by potassium hydroxide (KOH) stain or biopsy. It is to be noted that the

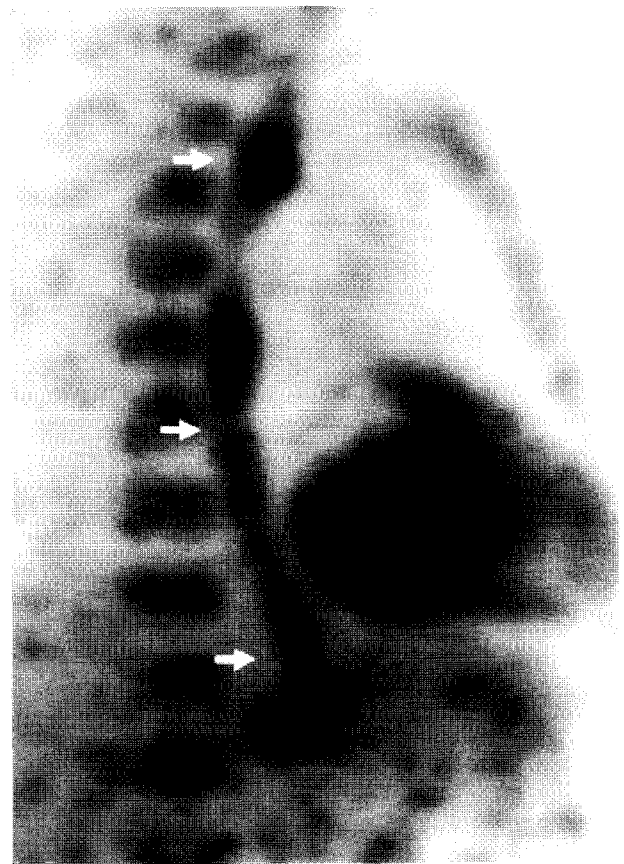
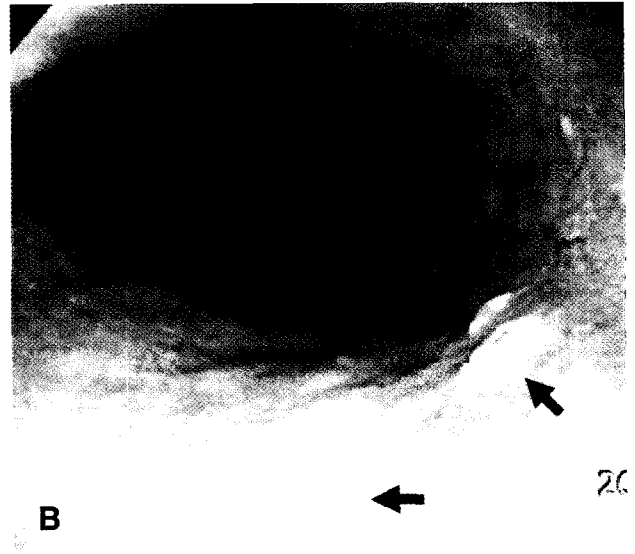
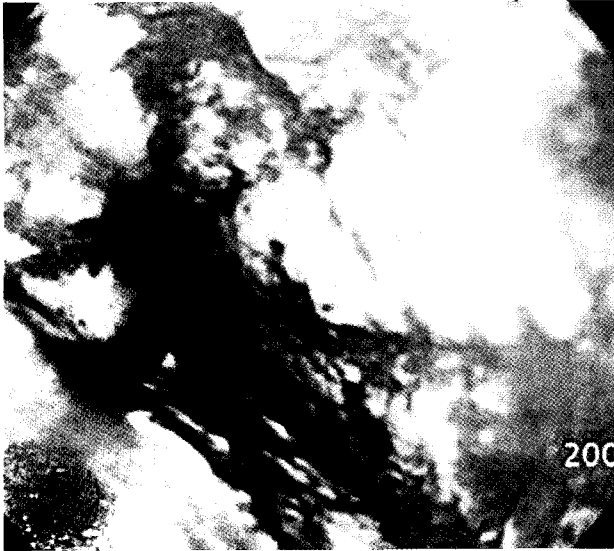


Fig. 1. Sagittal <sup>18</sup>F-FDG PET Maximum Projection Imaging (MPI) shows diffuse FDG uptake in nearly entire esophagus with mottled and segmental areas of more intense uptake (arrows). SUVs were 5.0max on the initial scan and ranged from 3.5 to 5.6 on the 1-h delayed scan.

mere presence of *Candida* in smear or cultured specimen cannot indict *Candida* as definitive offender. Differential diagnosis includes herpes simplex infection, cytomegalovirus infection, reflux esophagitis or radiation esophagitis.<sup>5)</sup> Tuberculosis, bacterial infection and other fungal infections

- Received: 2007. 4. 21. • Accepted: 2007. 4. 23
- Address for reprints: Yong-Whee Bahk, MD, Prof. Emeritus  
Department of Nuclear Medicine, Seoul SungAe Hospital, #451  
Shingil-1-dong, Youngdeungpo-gu, Seoul 150-960 Korea  
Tel: 82-2-840-7198, Fax: 82-2-2277-8598  
E-mail: ywbahk@hanmail.net



**Fig. 2.** (A) The initial endoscopy shows extensive yellowish white plaques laid over ulcerated erythematous esophageal lumen. Note columns of cloud-like yellowish white plaques. (B) Follow-up endoscopy shows nearly complete resolution of plaques with reminiscent residua (arrows).



**Fig. 3.** Double contrast esophagography of different patient shows multiple cobble-stone-like filling defects with mucosal irregularities. (Courtesy of Professor, Dr. Lim Jae Hoon, Samsung Seoul Hospital).

are uncommon. Oral Nystatin (Mycostatin) is effective in simple form and oral and intravenous fluconazole are the drug of choice<sup>6)</sup> in complicated cases and studies have shown similar response to itroconazole.<sup>7)</sup>

The patient was a 48-y-old male who sought medical

care because of esophageal "heat sense and distress" of several-day duration that was preceded by oral thrush. He had been well until the current ailment without history of upper gastrointestinal tract symptoms or signs such as sour regurgitation, indigestion, melena or weight loss. He smoked a pack a day and drank one bottle of soju 3 to 4 times per week for years. Endoscopy revealed rows of longitudinally arranged cloud-like yellowish white plaques (Fig. 1A) in the middle and lower thirds of the esophagus as well as superficial chronic gastritis. KOH-stain test was positive for Candida infection. For systemic evaluation patient chose PET-CT examination, which disclosed diffuse <sup>18</sup>F- FDG uptake in almost entire length of the esophagus (Fig. 2). Uptake was diffuse with mottled and segmental areas of higher uptake (SUVmax = 5.6). Esophagography of Candida esophagitis is characterized by the cobble stone sign and irregular profile serration of ulceration (Fig. 3; different patient).

Follow-up endoscopic study performed two months after two-week oral medication of Nystatin (Mycostatin) syrup revealed nearly complete resolution of esophageal plaques (Fig. 1B) in spite of his continued soju consumption and cigarette smoking in the meantime.

Our case documents PET-CT feature of well-established and successfully treated Candida esophagitis that occurred in a middle-age man without known predisposing factor.

## References

1. Holt JM, Candida infection of the esophagus. *Gut* 1968;9:227-31.
2. Vaquez JA. Invasive oesophageal candidiasis. *Drugs* 2003;63:971-89.
3. Scott BB, Jenkins D. Gastro-esophageal candidiasis. *Gut* 1982;23:137-9.
4. Walsh TJ, Merz WG. Pathologic features in the human alimentary tract associated with invasiveness of *Candida tropicalis*. *Am J Clin Pathol* 1986;85:498-502.
5. Vazques JA, Sobel JD. Mucosal candidiasis. *Infect Dis Clin N Am* 2002;16:793-820.
6. Ginsburg CH, Braden GL, Tauber AL. Oral clotrimazole in the treatment of esophageal candidiasis. *Am J Med* 1981;71:891-5.
7. De Wit S, Urbain D, Rahir F, Weerts D, Clumeck N. Efficacy of oral fluconazole in the treatment of AIDS associated oesophageal candidiasis. *Eur J Clin Microbiol Infect Dis* 1991;10:503-5.