

# Synchronous Squamous Cell Carcinomas of the Esophagus and Renal Pelvis

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**Abstract:** A 55-year-old man was incidentally diagnosed with a superficial squamous cell carcinoma of esophagus. However, the systemic survey with FDG PET/CT revealed a picture of more advanced disease because of the regional lymph node metastases and a suspected distal metastasis in the left renal pelvis, which was somewhat strange for a small superficial esophageal cancer. Subsequently, the renal pelvic lesion was confirmed as squamous cell carcinoma. However, a primary tumor rather than metastasis in the renal pelvis was considered according to the histologic characteristics and radiologic findings.

**Key Words:** FDG PET/CT, CT, endoscopic ultrasonography, squamous cell carcinoma, esophagus, renal pelvis

(*Clin Nucl Med* 2011;36: e171–e174)

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Conflicts of interest and sources of funding: none declared.

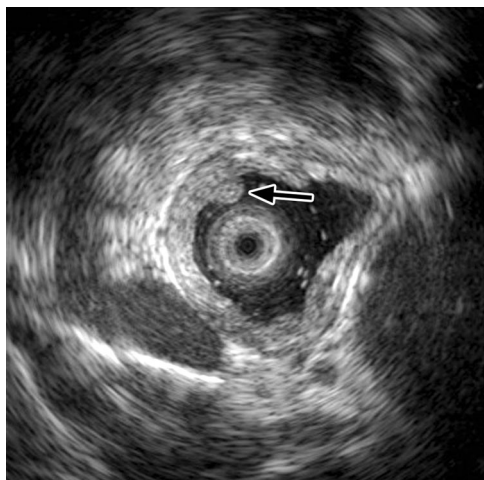
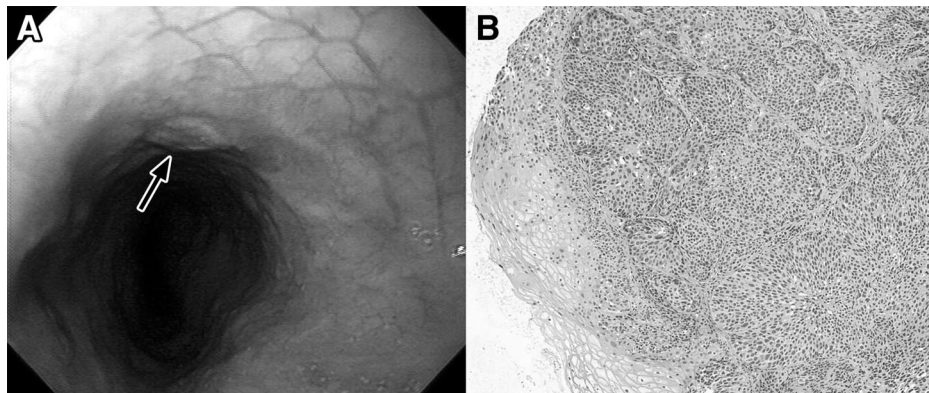
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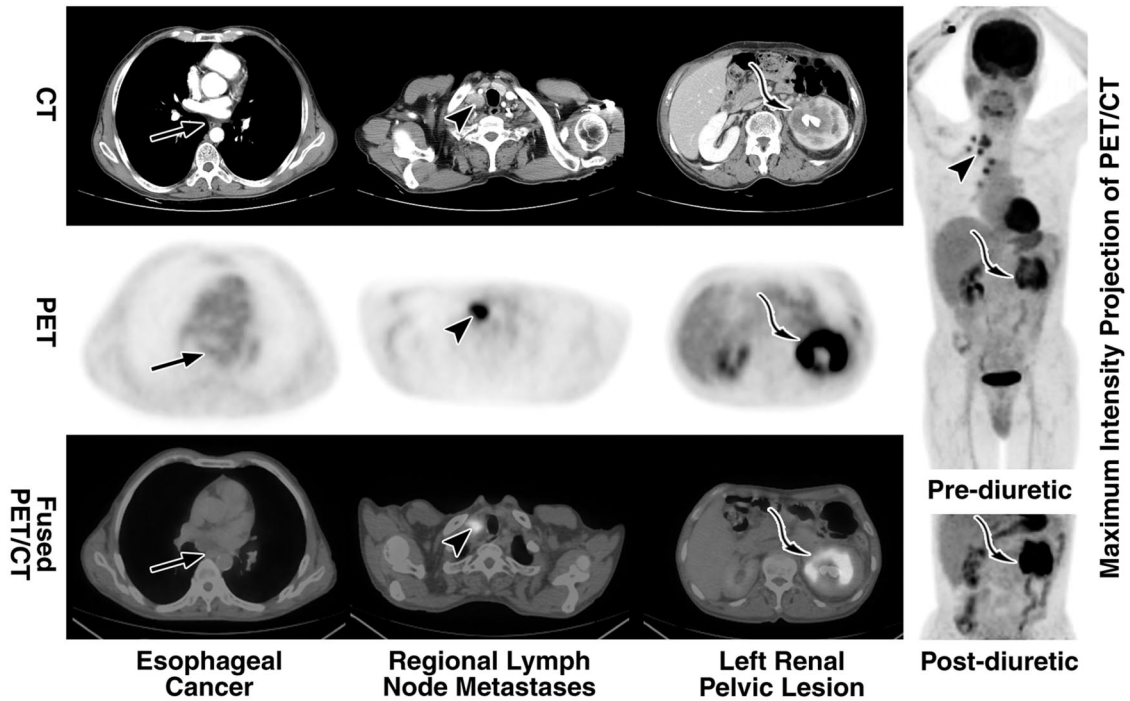
ISSN: 0363-9762/11/3611-0171

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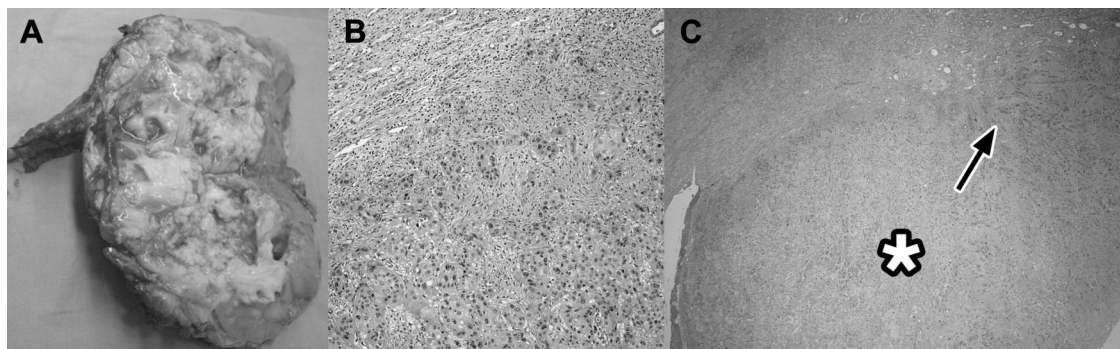
**FIGURE 1.** A 55-year-old man with alcoholic liver disease suffered from epigastric pain for 1 week. The findings from the esophagogastroduodenoscopy revealed gastric ulcer. Nevertheless, there was an incidental finding in the midthoracic esophagus, presenting with focal elevated esophageal mucosa (arrow, A) that was confirmed as squamous cell carcinoma subsequently (B; hematoxylin and eosin stain, 100 $\times$ ).



**FIGURE 2.** Serial examinations, including endoscopic ultrasonography (EUS), contrast-enhanced CT, and FDG PET/CT, were performed as routine staging workup of esophageal cancer in our hospital for determination of initial treatment strategy. The EUS revealed tumor invasion to the submucosa (arrow), suggesting a probable T1 tumor. Otherwise, it did not show periesophageal lymph node metastases.



**FIGURE 3.** However, neither contrast-enhanced CT nor FDG PET/CT could localize the primary esophageal cancer (arrows pointing to the corresponding location of proven esophageal cancer). This result might be attributed to the well-known, unsatisfactory sensitivity to detect a superficial esophageal cancer with these 2 imaging modalities.<sup>1</sup> In contrast, regional lymph node metastases were easily noted on both CT and FDG PET/CT (arrowheads). Nevertheless, a huge, poorly enhanced, calculus-contained, soft-tissue mass with intense FDG radioactivity (maximum standardized uptake value: 8.8) was present in the left renal pelvis (curved arrows). Although the cytologic examination of urine was negative for malignant cells, renal pelvic malignancy was still highly suspected according to the aforementioned radiologic finding.



**FIGURE 4.** For determining the appropriate treatment strategy, histologic proof of the left renal pelvic tumor was obtained through nephrectomy, because the residual function of left kidney was only 12% of total renal function. Grossly, the renal pelvis was almost occupied by the huge whitish necrotic tumor that invaded the renal fat and ureteropelvic junction (A). Microscopically, it showed moderate-to-poor differentiated keratinizing squamous cell carcinoma (B; hematoxylin and eosin stain, 100 $\times$ ). The tumor infiltrated widely in the subepithelial stroma of renal pelvis (asterisk, C; hematoxylin and eosin stain, 20 $\times$ ) and extended through the muscle layer to the renal parenchyma extensively (arrow, C). Chronic inflammatory change was observed in the adjacent upper ureter. On the other hand, there was no apparent severe dysplasia in the transitional epithelium in the vicinity of the tumor, which might be found along with the primary renal pelvic squamous cell carcinoma.<sup>2</sup> However, the present histologic and radiologic features of left renal pelvis tumor, including the tumor growth pattern, chronic urothelial inflammatory change, and presence of urinary calculus inside the renal pelvic tumor, still suggested the probable etiology of primary renal pelvic squamous cell carcinoma.<sup>3–5</sup> The current case presents squamous cell carcinomas in 2 visceral organs simultaneously. However, the renal pelvic tumor in the current case can be a primary or metastatic tumor, although the incidences of both the circumstances are believed to be rare. Squamous cell carcinoma accounts for approximately 10% of all primary renal pelvic tumors.<sup>6,7</sup> On the other hand, metastasis from the esophageal cancer is even rarer. To the best of our knowledge, there has only been a case report presented in the Japanese literature.<sup>8</sup> In contrast, renal parenchymal metastases from the esophageal cancer have been reported in several postmortem and initial diagnostic studies.<sup>9–15</sup> The renal metastases, including those from the esophageal cancer, tend to be of small size, in subcapsular location, and wedge-shape multiple lesions.<sup>16–21</sup> They also tend to demonstrate bilateral renal involvement. However, this is not an exclusive character for renal metastases and sometimes can be found in primary renal pelvic squamous cell carcinomas.

Primary squamous cell carcinoma of the renal pelvis is commonly associated with urolithiasis and hydronephrosis that are believed to cause chronic irritation, squamous metaplasia, and subsequent development of squamous cell carcinoma of the urothelium.<sup>3–5</sup> The gross appearance is usually bulky, necrotic, and ulcerated. The renal parenchyma and retroperitoneal soft tissues are usually invaded. The histologic appearance resembles squamous cell carcinoma in other organs.<sup>3</sup> However, if there is severe dysplasia in the transitional epithelium in the vicinity of the tumor, the diagnosis of primary squamous cell carcinoma arising from the renal pelvis will become easier.<sup>2</sup>

Although the esophageal cancer of our patient seems downstaged according to the histologic findings that favor simultaneous 2 primary malignancies in the esophagus and renal pelvis, the prognosis remains poor. The major reason is that the locally advanced renal pelvic squamous cell carcinoma has a poor prognosis, with a median survival of 7 months after surgery and a 5-year survival rate of less than 10%.<sup>7</sup> The clinical scenario of this case reemphasizes the importance of combined use of EUS, CT, and PET/CT to improve prognostic stratification, patient selection for surgical therapy, and overall survival of a patient with newly diagnosed esophageal cancer. Nevertheless, any uncommon metastatic site of a specific primary tumor should be proven as far as possible to direct appropriate treatment.