Squamous cell carcinoma of esophagus presenting as bone metastases in five cases

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Abstract

Introduction: Esophageal carcinoma rarely metastasizes to the bone. The objective of the current study was to report five cases of esophageal carcinoma which first presented with bone metastases.

Material and Methods: From January 1987 to June 2001, 550 patients with esophageal cancer were admitted to the Department Radiology of Ghaem Hospital for barium swallow, CT scan, sonography and plain radiographs. In five patients (three men, two women) first symptoms were bone pain and swelling due to metastasis. Radiographs and CT scan of specific bones were taken for diagnosis. Biopsy confirmed the diagnosis of squamous cell carcinoma metastases to bone. The primary site of malignancy was unknown at the time of presentation. Further evaluation including barium swallow, proved squamous cell carcinoma of esophagus that metastatized to the bones.

Results: Five patients with esophageal carcinoma (age range, 24–60 years; mean age, 45 years) Two patients showed solitary metastasis, and three patients had multiple metastases. Pelvis, cervical vertebrae, ribs, tibia and femur were involved. Patterns of bony destruction were lytic and in one patient was mixed (osteolytic-osteosclerotic). Two patients had cortical metastases simulating a primary bone tumor. The mean interval between skeletal metastasis and the appearance of dysphagia was two months.

Conclusion: Bone metastases are very uncommon at initial presentation in patients with esophageal carcinoma, but Patterns of bony destruction in esophageal carcinoma were predominantly lytic and rarely sclerotic.

Keywords: Esophageal cancer, Bone metastasis, Cortical metastasis

Introduction

Difficulty in swallowing is the most typical and also the earliest symptom of esophageal carcinoma. The other clinical features are retrosternal pain on swallowing, regurgitation of swallowed food, dysphonia, weight loss and anorexia (1). An extremely unusual condition is bone pain or swelling due to bone metastasis without complaints of localized esophageal symptoms.

To our knowledge only one report has been published in English literature with such complaints (2). Five cases here reported are unique because first symptoms were bone pain and swelling due to metastases of esophageal carcinoma. Also we reported the radiological features of bone metastasis of esophageal carcinoma.

Material and Methods

From January 1987 to June 2001, 550 patients with esophageal cancer were admitted to the Department of Radiology of Ghaem Hospital
for barium swallow, CT scan, sonography and plain radiographs. Detailed of records including clinical symptoms from each patient were taken for another report. Medical records were reviewed for presenting first symptoms and clinical course, including findings at histopathologic examination.

In five cases first symptoms were bone pain and soft tissue swelling due to metastases. Workup in these patients for primary site of tumor including barium esophagograms were done. Two patients were hospitalized in the orthopedic department for prominent soft tissue mass associated with cortical destruction in femur and tibia, favoring a diagnosis of primary malignant lesion of bone. Open biopsy revealed a metastatic squamous cell carcinoma invading the cortical bone. The time interval from diagnosis of bone metastases to the appearance of disphagia was two months. All patients finally underwent endoscopy with biopsy proved squamous cell carcinoma of the esophagus (well differentiated, 2; moderately differentiated, 2; and poorly differentiated, 1). Two patients showed solitary metastasis, and three patients had multiple metastases. Pelvis, cervical vertebrae, ribs, tibia and femur were involved. Patterns of bony destruction were lytic, and in one patient was mixed osteolytic-osteosclerotic.

**case 1:** A 60-year–old woman without addiction with two month history of pain in the left thigh and inguinal region referred to our hospital. A general physical examination at the time of presentation revealed no significant abnormalities except swelling and pain of the left thigh. Roentgenograms and computed tomography of the left femur showed an osteolytic lesion arising in the diaphysis of the femur with extensive cortical disruption, suggesting a cortical metastases and possibly a primary bone tumor (Fig. 1).

A biopsy was performed, that showed squamous cell carcinoma, metastasied to the bone (Fig. 2). After operation, the search for the primary site of SCC revealed negative gynecological examination, chest x-ray and sonography of the abdomen and pelvis.

**Fig. 1-** Case 1: Axial CT scan demonstrate a cortical metastasis of the left femur with extra osseous extension

Further questioning revealed that the patient had recently experienced a mild degree of dysphagia and odynophagia that she had thought was due to the operation of her thigh, and not worth mentioning. Barium esophagogram obtained showed a 5-cm segment of an esophageal mass with luminal narrowing and ulceration at the lower third of esophagus (Fig. 3).
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An endoscopic examination revealed a tumor 28 cm from the incisors. This was biopsied and showed differentiated squamous cell carcinoma of the esophagus (Fig. 4).

**Case 2**: A 42-year-old female presented to her primary-care physician complaining of a 2-month history of a painful and swollen left leg. Radiographs showed a lytic lesion of the mid portion of the left tibia simulated a primary bone tumor (Fig. 5).

Open biopsy revealed squamus-cell carcinoma metastasizes to the bone. Meanwhile she developed neck pain and difficulty swallowing solid foods. For further evaluation she was hospitalized and referred to our department for skeletal survey and GI tract studies. Roentgenograms of the cervical vertebrae showed mild collapse in six vertebra, and esophagogram showed a 7-cm segment of an esophageal irregularity, with luminal narrowing and mucosal destruction of the lower third of esophagus (Fig. 6). Endoscopy and biopsy confirmed SCC of esophagus with moderate differentiation.

**Fig. 3**- Cas1: Esophagoorms Show stricture with mucosal destruction, irregular intraluminal filling defects and “shouldering” sign

**Fig. 4** -Case 1, Photomicrograph of the biopsy specimen of the esophagus reveals a well-differentiated squamous cell carcinoma.

**Fig. 5**-Case 2: The radiograph shows an osteolytic lesion arising in the diaphysis of the left tibia with extensive cortical disruption

**Fig. 6**-Case 2: Esophagogram shows irregular, nodular, and polypoidal intraluminal filling defects.

**Case 3**: A 24-year-old male Afghaning worker with six month history, of left leg pain referred to our department for skeletal survey for bone metastases and search for the primary site of squamous cell carcinoma that metastastizes to iliac bone. He could not walk without stick and recently had difficulty in swallowing solid foods, which contributed to a 5-kilogram weight loss. Skeletal radiographs revealed only a large lytic metastasis to the left iliac bone (Fig 7).
Fig. 7- Case 3: Anteroposterior roentgenogram of the pelvis, illustrating a large ill-defined destructive lesion in the left ileum.

Chest x-ray and sonography of the liver were unremarkable. Esophagogram showed a 6-cm segment of an esophageal mass with luminal narrowing and mucosal irregularity and ulceration at the third portion of esophagus that confirmed in endoscopy and biopsy as poorly squamous cell carcinoma of esophagus that metastasize to the iliac bone.

Case 4: A 60-year-old woman with a 30-year history of addiction to opiate and cigarette smoking referred to the outpatient clinic of Ghaem Hospital. She had three-months history of pain of the right shoulder and right hand. Radiographs of the cervical showed collapse of the seventh cervical vertebra highly suggestive of bone metastases (fig. 8).

Physical examination revealed adenopathy in the right side of the neck, and biopsy showed squamous cell carcinoma metastases to the lymph nodes. Workup for the primary site, including barium esophagogram showed a 4-cm segment of an esophageal mass with luminal narrowing and mucosal irregularity at the level of the aortic arch. Endoscopies and biopsy confirmed esophageal carcinoma.

Case 5: A 40-year-old male farmer, without addiction referred for radiographs of the chest and CT scan. He had painless swelling in the right side of the chest for one month and had developed dysphagia recently. Radiological evaluation revealed carcinoma of the lower third esophagus metastasized to the right sixth and seventh ribs as a lytic–sclerotic lesion with expansion and extension to the soft tissues (Fig. 9). Endoscopy and biopsy showed SSC of esophagus with bone metastases.

Fig. 8: Case 4; Lateral roentgenogram of the cervical spine illustrating destruction and compression fracture of the seventh cervical vertebra.

Fig. 9(a, b)-Case 5: Axial CT scan demonstrate lytic-sclerotic metastasis of the ribs and associated soft-tissue mass.
Discussion

The present cases exhibit two unusual features of esophageal carcinoma: delayed dysphagia and bone metastasis. Distant metastases of esophageal carcinoma has been reported in up to 85% patients who had undergone autopsies by some authors, with a high frequency in the lymph nodes, lung and liver (3). Metastases to bone have been considered uncommon. This has been reported to vary from 1% to 14% in autopsy series (4,5). In clinical practice, bone metastases of esophageal cancer occurred infrequently. Quint et al examined, 838 newly diagnosed of esophageal carcinoma cases by CT scan, plain radiographs and bone scan and showed 18% had metastases of which only 1.6% involved bone (6).

Recently, FDG-PET imaging technique has improved the ability to recognize distant metastasis of esophageal carcinoma (7). And detection of bone marrow micrometastasis by immunomagnetic separation shows positive cancer cells in up to 25% of patients with esophageal carcinoma (8, 9). In English literature the diagnosis of bone metastases of esophageal carcinoma was established definitively by roentgenography were infrequent (2, 3, 10).

An extremely unusual condition were initially seen a patient with esophageal carcinoma with bone pain due to metastases without complain of dysphagea or other common features of esophageal carcinoma. A review of the literature of the last 25 years revealed only one case with these features (2). Roentgenological findings of esophageal cancer metastases in bones do not differ from the manifestations of osteolytic and sclerotic metastases in bones of malignant tumors of other localizations, (3, 11, 12). The spine is the most common site for bone metastases in esophageal carcinoma as other malignancies and may involved as locally spread. In two patients the cervical vertebra were involved, but carcinoma were involved the lower third of the esophagus, suggesting haematogenous spread to the spine. In two patients (Cases 1, 2) first symptoms were bone pain due to an osteolytic lesion arising in the cortex of the femur and tibia (Fig 1,5) with accompanying soft-tissue mass, raised the possibility of a primary bone tumor. The case reported by Shewchuk et al also reveal a cortical metastasis (2). Cortical metastases have been reported in the literature first described in bronchogenic carcinoma (13) and suggested a specific feature of bronchogenic carcinoma. After that, Coerkamp and Kroon (14) reported 26 patients with solitary cortical bone metastases from nine different types of primary malignant conditions, including six cases of GI tract. Cortical metastases probably develop from tumor emboli caught in nutrient artery branches (11).

References

مقدمه: کارسینوم می ری به تدریج به استخوان متراث می دهد. در این مطالعه 5 بیمار با تشخیص کانسر می ری که اولین بار با مستانز استخوانی انجام شده بود. 

روش کار: از سال 1987 تا سال 2001، 201 بیمار با کانسر می ری به رادیولوژی بیمارستان قائم (عج) جهت انجام گرگانی بلغ بارم، سی تی اسکن، سونوگرافی و رادیولوژی غیر مراجعه کردن در 5 بیمار (2 مرد و 3 زن) اولین شکایت می رای بود. در استخوان و تورم محل به دنبال مستانز بود. رادیوگرافی ها و سی تی اسکن استخوان های خاص جهت تشخیص گرفته شد و جهت تایید تشخیص بیوپسی از استخوان انجام شد. در این بیماران مکان اولیه کانسر در زمان مراجعه ناشناخته بود. بررسی های پیشرفت شامل گرافی بلغ بارم تشخیص بیماری را قطعی ساخته است.

نتایج: از 5 بیمار با تشخیص کارسینوم می ری (سال 1987-2001) سال مستانز استخوانی در دو مورد مستانز و احد استخوانی و 3 مورد موارد متعدد استخوانی وجود داشت. استخوان های دیگر شامل استخوان های گرگانی بلغ بارم سی تی اسکن و سونوگرافی نقش داشت. در 2 بیمار مستانزهای کورتیکال که تخلیه کننده تومور اولیه استخوانی بودند دیده شد که متوسط زمان برز دیسفیزی استخوان اسکلتی، دو ماه بود.

نتعجارگی: مستانز استخوانی به علت اولین ظاهر کانسر می ری بیمار می باشد. ولی تشخیص آن از جهت انتخاب روش درمانی بسیار ضروری است پانز و گیری استخوانی عمدتا به صورت لیپوسکس و در موارد نادری اسکلتیک می باشد.

واژه های کلیدی: مستانز کورتیکال، مستانز استخوانی، کانسر می ری