Unusual Bone Metastases in Sinonasal Squamous Cell Carcinoma on SPECT-CT Bone Scintigraphy: Report of A Rare Case

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ABSTRACT

Background: Squamous cell carcinoma (SCC) is the most common Sinonasal neoplasm and accounts for 50-60% of all Sinonasal malignancies. This is an aggressive malignancy that presents itself insidiously and is generally advanced when diagnosed; but distant metastases are rare. We reported a case of a patient with SCC of Sinonasal tract with an unusual pattern of bone metastases.

Case report: A 45-year-old male with epistaxis and palatine mass was diagnosed with undifferentiated non-keratinizing squamous cell carcinoma of Sinonasal tract, accompanied by swelling and joint pain. X-ray of right wrist joint suggested primary bone tumor with the differentials of aneurysmal bone cyst or fibrous dysplasia. Whole body 99mTc-MDP bone scintigraphy demonstrated increased radiotracer uptake bilaterally in various joints, including shoulder, elbow, wrist, metacarpal, knee, ankle, and metatarsal joints. Regional SPECT-CT revealed lytic lesions with irregular cortical destruction in various body parts, including scapulae, clavicle, humeri, radius, ulna, metacarpal bones, femurs, tibia, fibula, and talus, suggesting metastases. Periosteal reactions in both ulnas and a pathological fracture in the right ulna were detected, and a biopsy confirmed the presence of metastatic disease.

Conclusion: Bone scintigraphy with regional SPECT-CT plays a useful role in detecting bone metastases in Sinonasal squamous cell carcinoma, thus helps in staging as well as management of the patient.

Keywords: Squamous cell carcinoma of Sinonasal tract, bone metastases, whole body bone scintigraphy, SPECT-CT imaging.

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INTRODUCTION

Malignant Sinonasal masses are uncommon comprise only 3% of head and neck cancers (1). Squamous cell carcinoma is the most common subtype and comprises approximately 50-80% of Sinonasal malignancies (2). Bone metastasis from squamous cell carcinoma of head neck region is rare; comprises only ~1.3 %3. Bone metastases below the elbow and knee are rarer4. Whole body bone scintigraphy using 99mTc-MDP helps to identify such type of bone metastases in Sinonasal malignancies.

CASE REPORT

A 45-year-old male with epistaxis, palatine mass, swelling, and joint pain was admitted to MMCH's ENT department, but was treated and recovered without symptoms. Patient was nonsmoker, nondiabetic, normotensive and had no history of occupational exposure to nickel or wielding fumes. On examination, he was anemic and there were few enlarged right sided neck nodes. Investigations showed Hb% 6.9 gm/dl with high ESR (150 mm in 1st hour). Other hematological investigations were within normal limit. Contrast enhanced CT scan of nose and paranasal sinuses showed a malignant mass involving both nasal cavity (more in right) and all paranasal sinuses with irregular destruction of nasal and palatine bone (Figure -1). Punch biopsy from the palatine mass confirmed the diagnosis of undifferentiated non-keratinizing squamous cell carcinoma of Sinonasal tract. X-ray right wrist joint suggested primary bone tumor with the differentials of aneurysmal bone cyst or fibrous dysplasia. Then he was sent for whole body bone scintigraphy in INMAS, Mymensingh. Bone Scintigraphy using 99mTc-MDP demonstrated increased radiotracer uptake in the bones around the shoulder joints, elbow joints, wrist joints & metacarpal joints of both sides, bilateral knee joints, ankle joints and metatarsal joints (Figure 2-a).

The CT portion of regional SPECT-CT showed osteolytic lesions with irregular cortical destruction in acromial process of both scapulae, medial end of left clavicle, head & lower end of both humeri, upper & lower end of both radius & ulna, metacarpal bones of both sides, lower end of both femurs, both patellae, upper & lower end of both tibia & fibula and talus of both sides suggesting metastases (Figure 2-b,c). Periosteal reactions are seen in upper and lower end of both ulnas and pathological fracture in right ulna. Biopsy from right distal ulna confirmed the presence of metastatic disease.

Figure-1: Non-contrast axial CT scan of nose and paranasal sinuses shows soft tissue mass involving both nasal cavity (more in right) with irregular destruction of nasal bone (a). Contrast enhanced axial (b) and sagittal (c) CT scan of nose and paranasal sinuses show heterogeneous contract enhancing soft tissue mass involving both nasal cavity (more in right) with irregular areas of nasal bone and palatine bone destruction.

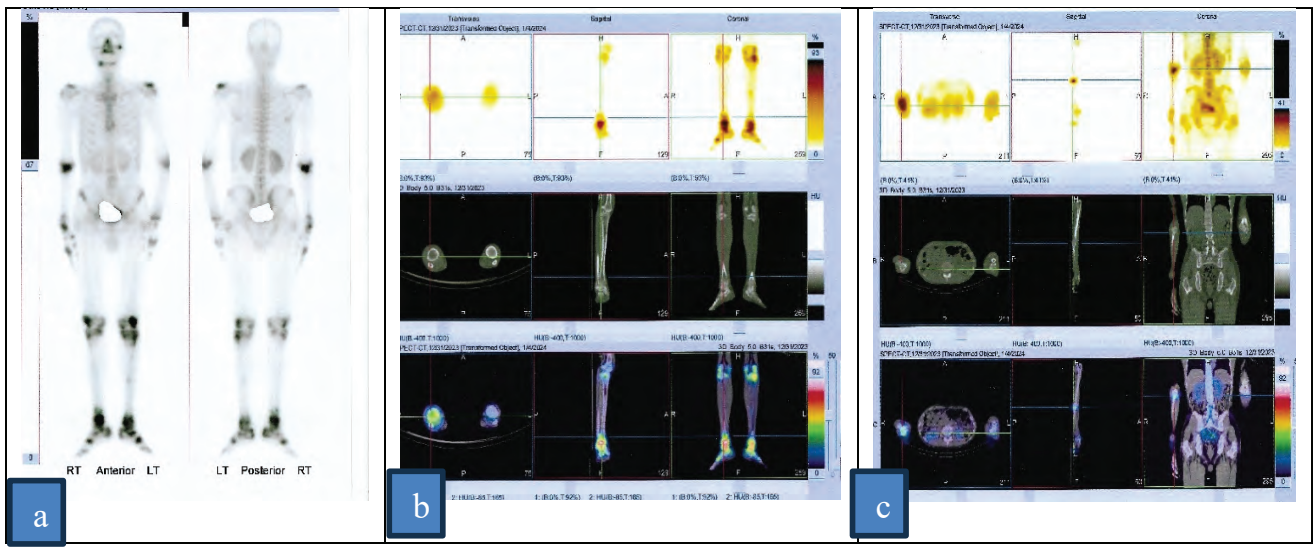

Figure 3: Planar image of whole-body bone scintigraphy demonstrated increased radiotracer uptake in the bones around the shoulder joints, elbow joints, wrist joints & metacarpal joints of both sides and bilateral knee joints, ankle joints and metatarsal joints (a). SPECT/CT image of both leg (b) and chest to pelvis (c) show osteolytic lesions with irregular cortical destruction in acromial process of both scapulae, medial end of left clavicle, head & lower end of both humeri, upper & lower end of both radius & ulna, metacarpal bones of both sides, lower end of both femurs, both patellae, upper & lower end of both tibia & fibula and talus of both sides suggesting metastases.

DISCUSSION

Squamous cell carcinoma of Sinonasal tract is rare entity and common in male with 2:1 ratio (2). It is seen commonly in between 50-60 years of age (5). Risk factors are tobacco smoking, human papilloma virus (HPV) infection, occupational exposure to nickel and welding fumes (6). The patients usually presented with epistaxis, nasal obstruction, pain, swelling and foreign body sensation6; these are nonspecific, often misdiagnose as inflammatory disease. Hence there is delay in correct diagnosis as well as treatment.

This case showed that squamous cell carcinoma can occur in nonsmoker as well as non-exposure to nickel and welding fumes. Symptoms like epistaxis should be taken seriously into account and require proper evaluation.

Squamous cell carcinoma of Sinonasal tract is an aggressive malignancy and involves the surrounding structures but distant metastases are rare (7). About 15% of patients develop distant metastases (8). Distant metastases usually involve the lungs, mediastinum, liver or bone (9). Bone is the second common site of distant metastases follows after lungs and accounts for 15–39% of distant metastases (10). Mostly involved bones are axial bones (11). Least involved bones are extremities; only in 17% cases (10). Bone metastases at the time of appearance of primary tumor indicate the aggressiveness of the tumor.

SPECT/CT can detect bone metastases more accurately (12). Most of the affected bones were appendicular and involved bilaterally which was very rare. All the lesions were osteolytic and few showed periosteal reactions. Pathological fracture was seen in right ulna.

Bone metastases usually cause pain and disability thus reduces quality of life (13). So, early detection helps in early management of the patients and offers better quality of life.

CONCLUSION

Sinonasal cancers have a poor prognosis, making surveillance imaging crucial. SPECT/CT offers new developments, including multiple bed positions, resulting in high-quality attenuation correction and co-registration of metabolic and anatomical images. Bone scintigraphy with regional SPECT-CT can play a useful role in bone metastases in sinonasal suqamous cell carcinoma.

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