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Case Report

Case Report: Submandibular Metastasis in a Case of Buccal Malignancy: Role of Ultrasound

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Abstract

Head and neck cancer is the 6th most common malignancy worldwide, and oral cavity tumors account for nearly one-third of the tumors. It's become usual trend to subject head and neck cancer patients for CT scan/MRI neck to diagnose these primary lesions and evaluate its loco regional as well as distant spread.

This case report strongly emphasizes the role of high frequency linear transducer and intra oral ultrasound imaging for diagnosis of oral cavity tumors.

Cervical lymph node metastasis plays an essential role in the treatment and prognosis of head and neck cancer patients. The assessment of the cervical lymph node status still remains an unsolved problem and ultrasound can be a great tool to detect these lymph nodes, characterize them and also in follow up of all post-operative patients.

Real time USG guided FNAC/tru cut biopsy of these lesions can help in primary diagnosis of these neoplastic lesions.

Keywords: Submandibular Metastasis; Buccal Malignancy; Intra Oral and High Frequency Ultrasound

Introduction

The lymph nodes associated with the submandibular gland are not within the gland's capsule but instead are located adjacently in the submandibular triangle. The submandibular lymphatics comprise 3 to 6 nodes, beneath the body of the mandible. The nodes are palpable on the superficial surface of the submandibular gland [1,2].

Malignant tumors may drain into these regional lymph nodes. Hence if round solid hypoechoic lymph nodes are seen within the submandibular space it could be a clue to search primary tumor in the oral cavity Today, the ultrasound technology has grown leaps and bound with availability of high frequency ultrasound - linear transducers and intra oral ultrasound [3,4]. These USG tools can be a primary tool to diagnose and evaluate the submandibular glands, submandibular spaces, cervical lymph nodes and even search the primary malignant lesion in the oral cavity with great efficacy [4]. Having done that one can further subject the patient to cross sectional imaging like CT/MRI for further evaluation and staging of the lesion [5].

Case History

A 47 Year old male patient presented to the surgeon with history of left submandibular swelling (Figure 1). There was history of mild fever and pain. The surgeon after clinical examination made a preliminary diagnosis of submandibular infection/abscess and was

given 5 days of antibiotics. After 5 days of medication, the swelling did not resolve and patient was referred to us for ultrasound of the submandibular swelling and to assess for abscess liquefaction.

Figure 1: Clinical photo of the left submandibular swelling.

The patient was evaluated with high frequency linear transducer (L12-3) using Philips High end Ultrasound system - Affinity 70.

The USG findings revealed: There were two well-defined hypoechoic rounded solid lesions seen within the left submandibular gland. One of the lesion within showed necrotic/echo poor areas (Figure 3 and 4). The right submandibular and bilateral parotid glands were normal (Figure 2). The morphology of these lesions was highly suggestive of enlarged lymph nodes. There was no periadenitis or any signs of inflammatory fat stranding surrounding these lesions.

Figure 2: Normal B mode USG image of right submandibular gland.

Figure 3

Figure 4

Figure 3 and 4: B mode USG images of the enlarged lymph nodes seen in the submandibular gland. The nodes are solid hypoechoic rounded and few echo poor necrotic areas within.

On colour doppler, these lesions showed some peripheral vascularity (Figure 5). The B mode and colour Doppler findings and the submandibular gland - an odd site of enlarged lymph nodes raised a high suspicion for these lymph nodes to be secondary metastatic enlarged lymph enlargement and hence we did dedicated screening of the entire neck region.

The bilateral thyroid and parotid glands were normal on B mode ultrasound. On further screening, the left buccal region showed an irregular solid hypoechoic mass. The mass measures 2.6 x 2.8 cms

Figure 5: Colour doppler image of left submandibular gland shows minimal perilesional vascularity.

in dimensions (Figure 6) and showed significant intralesional and peripheral vascularity on colour Doppler studies (Figure 7 and 8).

Figure 6: B mode USG image showing solid irregular hypoechoic mass lesion in the left cheek region.

We further strengthened our findings by doing intraoral ultrasound with a C8 - 4V intraoral transducer which confirmed the mass lesion and its adherence to the left buccal mucosa. There was suspicious invasion of the alveolar process of the maxilla with cortical irregularity noted (Figure 9).

Figure 7

Figure 8

Figure 7 and 8: Colour doppler and spectral doppler images of the solid mass in the left buccal region showing intralesional and perilesional significant vascularity highly suspicious for neoplastic malignant etiology.

All the above findings were highly suggestive of neoplastic malignant etiology and we proposed a USG diagnosis of primary buccal malignancy with secondary metastases in the submandibular gland. The patient was further subjected to MRI neck which confirmed all our USG findings.

Figure 9: Intraoral ultrasound B mode image confirming the hypoechoic ill defined buccal mass lesion adherent and invading the buccal mucosa.

The MRI revealed an ill-defined soft mass lesion seen arising from the left buccinator space (buccal mucosa) with involvement of superior and inferior gingivobuccal sulcus and lateral involvement of the buccal mucosal fat. The underlying mandibular and maxillary cortex appears normal. The mass measured 2.6 x 2.5 cms in axial and 3 cms in the caudocranial axis (Figure 10 and 11).

There were well defined lesions seen in the left submandibular space measuring 2.5 x 1.8 cms with extensive surrounding perilesional oedema and highly suggestive of metastatic lymph nodes (Figure 12 and 13). The MRI conclusion was of a primary malignant lesion in the left buccal mucosa with metastatic left submandibular nodes.

The patient gave history of chronic tobacco chewing since last 10 years.

The tru cut biopsy of the lesion was done by the surgeon and the buccal lesion proved to be well differentiated squamous cell carcinoma. The patient further underwent surgery for the same lesion - Commando surgery with wide local excision, left hemi mandibulectomy, left upper alveolectomy and extensive lymph node dissection. Patient is now doing well post-surgery.

Figure 10

Figure 11

Figure 10 and 11: Axial and coronal images of the MRI shows mass lesion in the buccinator space involving buccal mucosa and involving the superior and inferior gingivobuccal sulcus.

Figure 12

Figure 13

Figure 12 and 13: Axial and coronal MRI images showed oval shaped lesions in the submandibular space with perilesional oedema and fat stranding representing metastatic lymph nodes.

Review of Literature and Discussion

Head and neck cancer is the 6th most common malignancy worldwide, and oral cavity tumors account for nearly one-third of the tumors [6]. Squamous cell carcinoma (SCC) is the most frequent histotype: it usually arises in the mobile tongue, followed by the lip, floor of the mouth, and buccal mucosa [6].

There is a male preponderance and the vast majority of patients are heavy smokers and alcohol abusers.

Head and neck cancer is one of the most physically and emotionally devastating cancers and often leaves the patient disabled and disfigured [6].

Today in modern era, the patients are immediately subjected to the cross sectional imaging modalities like CT scan and MRI for evaluation of the lesions in the neck and head.

CT and MRI are great modalities in detection and staging of the neoplastic lesions in the neck.

With advent of high frequency linear transducers and intraoral ultrasound for evaluation of superficial structures, this modality has a promising role in the primary detection of the lesions in the neck [7,8].

Besides evaluating the thyroid and salivary glands, ultrasound is a great tool in detection of lesions in the oral cavity - buccal mucosa, massetric region. This modality is widely available, cheap, no radiation involved, best in pediatric cases [7].

The presence of cervical metastasis is one of the factors that influence the outcome of the patients in the oral malignancies [11].

Cervical lymph node metastasis plays an essential role in the treatment and prognosis of head and neck cancer patients. The assessment of the cervical lymph node status still remains an unsolved problem and ultrasound can be a great tool to detect these lymph nodes, characterize them and also in follow up of all post-operative patients [4,7].

As seen in our case, the detection of enlarged lymph nodes in the left submandibular gland was a clue/guide to search for the primary tumour in the oral cavity. The morphological assessment of the lymph node and its internal characteristic was a pointer towards the nodes being malignant nodes. Also, the evaluation of the

primary buccal lesion with high frequency linear transducer and intra oral ultrasound helped us to diagnose the primary buccal neoplasm, its size and invasion and its depth of invasion. It also helped us to see the spread and extent of the lesion. Colour Doppler helped to assess the vascularity within the solid lesion and helped us to clinch the diagnosis of malignancy [8-10].

At present, MR is considered the first-choice radiological examination for preoperative diagnostic assessment of head and neck squamous cell carcinomas except for the larynx and hypo pharynx [12,13].

With MR, the radiologist is able to analyze neoplastic extension, intratumoral vascularization, tumor borders, and intracranial and/or perineural spread and stage the lesion [12,13].

Its main limitations are that it is expensive, requires substantial time to perform a proper exam, and is impossible to perform in non-cooperative or claustrophobic patients, or in those with metallic prostheses and pacemakers.

By contrast, the advantages of USG and IOUS (Intra oral ultrasound) are related to the fact that is a fast and high-resolution examination, less invasive, more cost-effective, and requires less compliance by the patient. On the other hand, it remains highly operator-dependent and cannot be considered as the best radiological examination for lesions in close proximity to bony structures or located in the posterior half of the oral cavity.

Conclusion

This case high lights the fact that ultrasound can be a great tool for primary screening and detection of the oral cavity and neck masses, in evaluation of cervical lymph nodes and in follow up of post-operative patients to evaluate for recurrence and to do USG guided FNAC/tru - cut biopsy of these lesions for primary diagnosis.

Conflict of Interest

None.

Financial Disclosure

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