



CARCINOMA OF PENIS: USG, DOPPLER, ELASTOGRAPHY IMAGING WITH PATHOLOGICAL CORRELATION- A CASE REPORT

Radiodiagnosis

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ABSTRACT

Penile carcinoma is a rare malignancy of developed world with increasing incidence in developing countries. The most common site of occurrence includes glans and foreskin. Shaft of penis is the least common site affected. Penile ultrasound provides readily available, non-invasive and cost-effective modality for evaluating various penile masses and discriminating between benign and malignant pathologies. We present an interesting case of 84year-old man who presented with history of nodular mass over shaft of penis. Grayscale ultrasound, colour Doppler and sonoelastography findings are discussed.

KEYWORDS

Penile Carcinoma, Ultrasound, Sonoelastography, Colour Doppler

INTRODUCTION:

Squamous cell carcinoma of penis is rare malignancy affecting men between 50-70 years of age group. Management and surgical excision of tumour depend on its size, site, regional and distant metastasis. Imaging modality like ultrasound aids clinical examination in delineating exact site and size of tumour, assessing its depth of invasion and spread of disease which proves helpful in management of patient. It also plays an important role in follow up of such patients²

CASE REPORT:

A 84 year-old man was admitted to our hospital with history of nodular mass over penis with blood stained discharge on and off since 1year. Clinical examination revealed a tender nodular mass over shaft of penis with foul smelling blood stained discharge. No inguinal or abdominal lymphadenopathy was noted. Patient was referred to radiology department for further work up.

Gray scale ultrasound revealed hypoechoic solid mass with heterogenous echotexture over shaft of penis measuring approximately 22x 9 mm in size. Multiple calcifications were noted within the mass. [FIGURE 1]. Colour and power Doppler revealed increased vascularity in solid mass. [FIGURE 2a and 2b] On elastography, penile growth shows mostly stiff tissue [dark blue on elastography colour scale] with a strain ratio of 82 indicating malignancy. [FIGURE 3]. Biopsy examination confirmed the diagnosis of Squamous cell carcinoma.

DISCUSSION:

Penile carcinoma is a rare malignancy among men in developed countries. However, there is increased incidence of such malignancy in developing countries like India with most common age of presentation being 5th to 7th decades of life. There are several types of penile cancer including squamous cell carcinoma, adeno-squamous, sarcoma etc. Squamous cell carcinoma is the common variant, accounting for more than 90% penile cancers. Glans followed by foreskin are most common site for such carcinoma. Rarely coronal sulcus and shaft of penis are affected.³

Imaging plays a very important role in accurate diagnosis, staging, management and follow up of such patients. Ultrasound is readily available and non-invasive modality helps in delineating the size and extent of tumour, presence or absence of regional and distant lymphadenopathy and vascular assessment of the tumour.

On ultrasound, penile carcinoma appears as a hypoechoic mass with increased vascularity on doppler. Regional lymphatic spread to inguinal lymph nodes as well as distant metastasis can be evaluated on ultrasound.⁴

Sonoelastography is an evolving ultrasound modality that aids in assessing the elasticity of tissues. Elasticity can be evaluated using Tsukuba Elasticity Score (TES), also known as the Itoh-Score or Elasto-Score which is a 5 point scoring system where score 1 represents an even strain for entirely hypoechoic lesion [imparting an entire green colour], score 2 represents strain in most of hypoechoic

areas while some areas with no strain [a mixed pattern of green and blue colour is visualised] , score 3 represents strain at the periphery of lesion sparing its centre [where periphery is imparted green colour and centre appears blue] ,score 4 represents no strain in the entire hypoechoic lesion but sparing of its periphery[where centre appears blue and periphery appears green] , a score of 5 represents no strain in entire hypoechoic lesion [imparting an entire blue colour]. Lesions score 1 and 2 are considered benign, lesion with score 3 are considered to be probably benign and lesion with score 4 and 5 are considered malignant.⁵

Strain ratio is another parameter used for interpreting elasticity of tissues. It is semi-quantitative measurement useful for differentiating benign from malignant lesions. It is obtained by comparing a strain within the lesion with that of surrounding normal tissue of same depth. Higher the strain ratio, higher will be probability of malignancy.⁶

To conclude, penile carcinoma, although rare sometime may constitute a diagnostic challenge. Imaging modalities aids in diagnostic work up, management and post-operative follow up of such patients. Sonoelastography is a new investigation in the field of ultrasound which studies the elasticity of the tissues. Malignant masses are usually hard and exhibit high strain ratio with a score of 4 or 5 on elastography scale. Thus, this modality is useful in diagnosis and management of patients.

IMAGES AND LEGENDS:



FIGURE 1: Gray Scale Ultrasound Revealed Hypoechoic Solid Mass With Heterogenous Echotexture Over Shaft Of Penis Measuring Approximately 22x 9 Mm In Size. Multiple Calcifications Were Noted Within The Mass. =

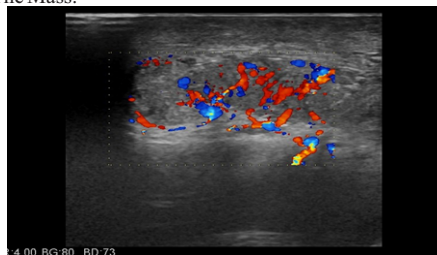


Figure 2b: Colour Doppler Revealed Increased Vascularity In Solid Mass

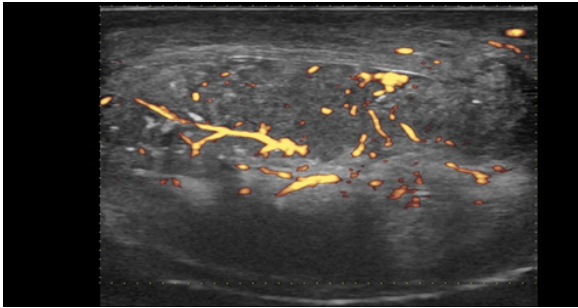


FIGURE 2B: Power Doppler Revealed Increased Vascularity In Solid Mass.

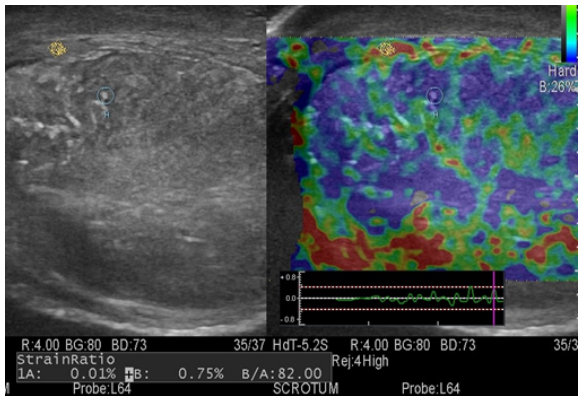


FIGURE 3: On Elastography, Penile Growth Shows Mostly Stiff Tissue [dark Blue On Elastography Colour Scale] With A Strain Ratio Of 82, Indicating Malignancy.

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