

ROLE OF MAGNETIC RESONANCE IMAGING IN ASSESSMENT OF INGUINO-SCROTAL LESIONS

Ahmed Hafez Afifi, Omnia Ezz Eldin Fathy Alsaadany, Ahmed Mohamed Ahmed Soliman Elhediny

Department of Radiodiagnosis and Intervention, Faculty of Medicine, Alexandria University, Alexandria, Egypt

Introduction

Imaging the inguino scrotal contents has advanced significantly in the last decades, however, inguino scrotal malignant neoplasms are rare in male patients representing about 2% of neoplasms in males, testicular carcinoma representing the most common malignant neoplasm at the age of 20-35 years old males, based on increasing incidence of inguino scrotal tumors over the last decades, imaging of inguino scrotal lesions by means of new technologies allowing better morphological assessment and better inguino scrotal tissue characterizations. Hence MRI representing confident and reliable diagnostic tool for evaluation of inguino scrotal masses providing valuable orientation for further management, reducing the unnecessary surgical interventions, especially in non conclusive ultrasound findings which represents the first imaging modality choice because of its wide availability, efficient grey scale resolution and color Doppler images, however capability of confident Tissue characterization is not always possible. MRI has advantage over ultrasound because its wider FOV, multi planar imaging capability of whole inguinal and scrotal region and because it is less operator dependent technique

Aim of the work

The aim of this study is to assess the role of magnetic resonance imaging in assessment of inguino-scrotal lesions.

Patients and Methods

Study population 49 patients of different ages complained of suspected scrotal or inguinal lesions Patients have been examined at the department of urology and directed to the department of radiodiagnosis at Alexandria main university hospital during the period from May 2020 to August 2022. All patients were subjected to: **Full history taking**, including age, sex and complaints and any medical related conditions. **Clinical examination** including general and urological examination carried out by the referring doctor with a written documentation. **Viewing any previous ultrasound scans.** **MRI study.** The MRI examinations were performed on a 1.5-T MRI using the following sequences;

Unenhanced Axial fast spin echo T1-weighted sequences (T1WI). Axial, sagittal and coronal fast spin echo T2-weighted images were obtained with and without fat suppression (FS). DWI was performed & ADC value were measured in every case In patients with inguino scrotal pathology, Contrast-enhanced axial, coronal, and sagittal plans in spin echo, fat suppressed T1WIs were obtained.

Results

In our study 49 inguino scrotal lesion were identified, eighteen cases of intra testicular neoplastic lesions all of them were malignant except one intra testicular benign lesion, nine extra testicular neoplastic lesions of which seven cases were benign and two cases were malignant. Nine cases showed anatomical abnormalities, eleven cases of inflammatory lesions, Two cases of traumatic lesions were identified. According to direct MRI features, follow up and histopathology, we have found that 19 lesions were malignant and 30 lesions were benign. Regarding inguino scrotal malignant neoplastic lesions in our study, conventional and advanced MRI techniques could accurately detect all inguino scrotal neoplastic lesions depending on presence of variable signal intensity at T2WI, contrast enhancement after contrast administration, presence of restricted diffusion and presence of intra lesional areas of hemorrhage and necrosis. In our study benign inguino scrotal neoplastic lesions could be diagnosed accurately depending on absence of significant contrast enhancement, no diffusion restriction at DWI & ADC map. Conventional MRI sequences could also accurately detect all cases of inguino scrotal anatomical abnormalities, traumatic lesions and inflammatory lesions depending on direct MRI signs. Depending on conventional MRI sequences combined with DWI and ADC maps, two false positive cases present in our study, one extra testicular lesion proved pathologically to be benign extra testicular desmoid fibromatosis lesion. The other case proved pathologically to be inflammatory chronic granulomatous tuberculous lesion. For the diagnosis of inguino scrotal lesions, conventional MRI combined with DWI & ADC map showed 96% accuracy, 100 % sensitivity, 93% specificity, 90% PPV, and 100 % NPV in detecting inguino scrotal lesions and differentiating benign from malignant testicular lesions.



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Table (1):Diagnostic performance (sensitivity, specificity) of ADC value to detect the malignancy in 49 cases

	AUC	P	95% C. I (AUC)	Cut off (95% CI)	Sensitivity	Specificity	PPV	NPV
ADC	79.5%	0.0005*	(0.66- 0.93)	≤.860 (0.13 - 0.79)	79%	87%	79%	87%

Table (2):Diagnostic Accuracy of MRI in comparison with final diagnosis by pathological findings and follow up in detection of Malignancy:

Final diagnosis (by direct MRI diagnostic findings, follow up & pathology)				Sensitivity	Specificity	PPV	NPV	Accuracy
Malignant (n=19)	38.8%	Benign (n=30)	61.2%	100%	93%	90%	100%	96%

Conclusion

MRI showed great potential diagnostic value of in characterization of suspected inguino scrotal lesions. Conventional MRI and advanced MRI techniques are superior and imaging problem solving modalities for identifying & evaluating equivocal or inconclusive inguino scrotal lesions Conventional MRI and advanced MRI techniques give valuable anatomical, localizing and tissue characterizing data of inguino scrotal lesions. Different imaging modes of conventional MRI and advanced MRI techniques play a major role in differentiating benign from malignant lesions. Conventional MRI and advanced MRI techniques showed high diagnostic accuracy, high sensitivity and specificity in identifying, localizing, and classifying different lesions in a consensus reading.