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Role of Magnetic Resonance Imaging in Investigation of Undescended Testes

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Abstract

Location of undescended testis is important because of the greatly increased risk of malignancy. Various imaging methods have been used in the past with only partial success. In many cases an exploratory laparotomy has been performed although even this has not proved to be completely successful. The use of MRI in 10 adult patients with 10 undescended testes is described. We were able to locate the position in 8 from these 10 patients by this method. MRI does not use ionizing radiation and is a useful method for determination of these radio-sensitive organs.

Introduction

BECAUSE of the tremendous increase in the risk of malignancy of undescended testis, location of its site prior to surgery for scrotal placement in prepubertal boy and for orchidectomy in unilateral cases in adults raised the idea to evaluate the role of MRI in 10 adult patients for locating and examining undescended testis.

Material and Methods

Ten consecutive adult patients presenting with undescended testes were scanned using both mid and low field MRI scanners. Patients were scanned in transverse and coronal planes. Transverse scans were specifically of the pelvis but coronal scan extends from kidneys to scrotum. T1 weighted scans were performed in the coronal plane and multi echo scans (T2 & pro-

ton density) were done in transverse plane.

Results

Patients ages ranged from 16-29 years (mean 23.5Y).

Undescended testes were not demonstrated in two patients. Six patients from the eight testes identified by MRI were in the inguinal region and two were intra abdominal.

On T2 weighted scans the typical appearances are those of ovoid structure of high signal surrounded by black outline. On proton density scans the appearances are similar with the testis showing high signal compared with the surrounding structures (Fig. 4).

On T1 Scans the signal is similar to that

of muscles and testes are easily distinguished from fat (Fig. 1).

Furthermore, discrimination between undescended testes and bowel, the latter can be traced as a tubular structure on con-

secutive scans. The undescended testis is smaller than scrotal placed testis but usually has similar signal parameters on different sequences.

Results are summarised in table 1.

Table (1): Summary of the Results.

Case	Age	Position of testicle at MRI	Comments
1	28	L. in inguinal region R. normal	Ectopic Lt Pelvis kidney
2	21	L. normal R. inguinal region	
3	29	L. normal R. not found	
4	29	L. not found R. normal	
5	16	Both at inguinal areas	
6	26	Both situated in abdominal cavity adjacent to lateral borders of bladder	Surrounding bowel loops containing gas
7	18	Both at inguinal region	
8	20	L. inguinal region R. normal	



Fig. (1): Case (A). Coronal T1 weighted spin echo MRI scan, showing the left testis in the inguinal ring and the right testis in scrotum.

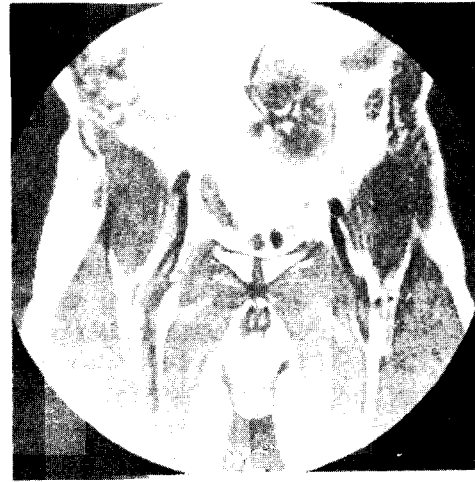


Fig. (2): Case (A). T1 weighted coronal scan, posterior to Fig. 1, showing malposition of ectopic left kidney.

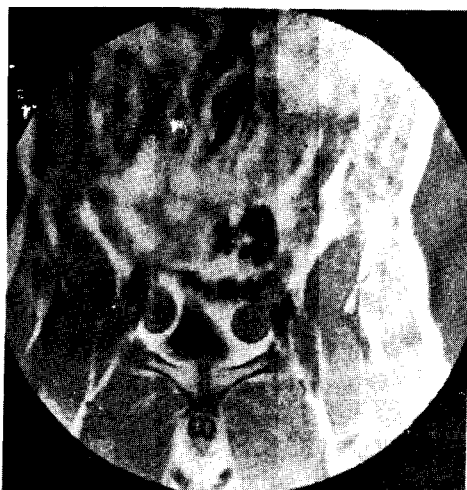


Fig. (3): Case (F). Coronal T1 weighted spin echo scan showing empty scrotum.



Fig. (4): Case (F). Trans. T2 weighted spin echo scan, the right undescended testis is shown to have high signal, with surrounding low signal line.

Discussion

In adults the undescended testis will rarely, if ever be effective as a reproductive organ [1].

The risk of death from malignant change in an undescended testis remains greater than the risks of surgical intervention up to the age of 32 years [2]. Intra-abdominal testes have a greater malignant potential and worse prognosis than inguinal testes [2]. For these reasons it is important to locate the impalpable testis in favour of the surgeon who can perform the appropriate incision prior to orchidectomy.

Eighty percent of impalpable testes are found to lie in the inguinal region and ultrasound might be successful to discover it [3], despite of this fact ultrasound should still be the line of investigation and it is readily available and noninvasive.

Testicular venography is safe and more

easily performed than arteriography particularly on the left side where position of testicular vein, joining the left renal vein is constant [4].

Computed tomography is a useful method particularly if the testis is situated close to inguinal ring, but is usually unsuccessful in intra-abdominal demonstration due to low inherent contrast difference with surrounding structures.

MRI has the advantage of showing superficial and deep structures and involve no ionizing radiation or interventional procedures. Other abnormalities outside the testis can be also identified.

In our series two cases failed to be identified with MRI, these were the two oldest patients.

Conclusion:

MRI is quite a suitable method for investigation of undescended testis. Ultra-

sound should be used as the first investigation followed by MRI in those cases where the testis is not identified. CT can be used if MRI is not available. Venography may be used if site of testis remains elusive.

References

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