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Original Research

Assessment of penile fracture using USG

Mamta Gaur

Associate Professor, Department of Radiodiagnosis, Career Institute of Medical Sciences, Lucknow, Uttar Pradesh, India

ABSTRACT:

Background: Penile fracture is a medical emergency that involves the rupture of one or both of the tunica albuginea, the fibrous coverings that envelop the corpora cavernosa (erectile tissue) in the penis. The present study was conducted to assess penile fracture using USG. **Materials & Methods:** 46 cases of penile fracture underwent USG done by 7.50 to 12 MHz linear probe. Doppler was used to identify vascular pattern or to see any abnormal vascularity or malformations. All patients underwent surgical repair. **Results:** Age group 18-30 years had 16, 30-40 years had 21 and 40-50 years had 4 cases. Causes were rigorous masturbation in 18, enthusiastic sexual intercourse in 15, trauma during rolling over in bedin 6, manipulation of erected penis in 4 and direct trauma to penis in 3 cases. USG grading found was grade Oin 11, Iin 19, II in 7, III in 5 and IV in 4 patients. Complications were erectile dysfunction in 2 and decreased sensation in 1 case. The difference was significant (P< 0.05). **Conclusion:** The preferred investigation for identifying penile fractures is USG since it is quick, easy to perform, and reasonably priced. This will provide others new options to prevent misdiagnosis and treatment delays.

Keywords: Fracture, penis, USG

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Corresponding author: Mamta Gaur, Associate Professor, Department of Radiodiagnosis, Career Institute of Medical Sciences, Lucknow, Uttar Pradesh, India

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INTRODUCTION

The penis is covered by skin, foreskin (prepuce) & stratified squamous mucosa. The penis consists of three masses of erectile tissue - two corpora cavernosae one on each side dorsally and one corpora spongiosa ventrally through which urethra passes. All three are covered separately by white fascia known as tunica albugenia.[1] The expanded free end of corpora spongiosa is called glans. Common penile diseases are congenital, infections, carcinoma and erectile dysfunction (ED). Penile fracture is a medical emergency that involves the rupture of one or both of the tunica albuginea, the fibrous coverings that envelop the corpora cavernosa (erectile tissue) in the penis.[2] This typically occurs during vigorous sexual activity or trauma to an erect penis.Trauma during intercourse is the most common cause, especially when the penis slips out of the partner and strikes the perineum or pubic bone. It may result from masturbation, aggressive or unusual techniques, accidental injury such as rolling over onto an erect penis or hitting it against a hard surface.[3]

Ultrasonography (USG) is the modality of choice in diagnosing it and providing a road map to surgeons for repair. USG plays a crucial role in analyzing penis; it is the most common radiological investigation ordered due to its diagnostic value in penile fracture.[4,5] It is of immense value to help surgeon to perform and avoid nonsurgical complications. As most patients present in the middle of the night due to the typical cause, which is related to sexual activity, it presents as an emergency situation that requires quick and accurate decision-making.[6]

The present study was conducted to assess penile fracture using USG.

MATERIALS & METHODS

The present study was conducted on46 cases of penile fracture. All were informed regarding the study and their written consent was obtained.

Data such as name, age, etc. was recorded. In all patients USG was done by 7.50 to 12 MHz linear probe. The probe first transversely from the base of

the penis to tip on the dorsal aspect. Then it was put in longitudinal position to view the penis in entire length. Then turned penis to lie on lower abdomen to see ventral aspect. Once again transverse and longitudinal scanning was done from base to tip on ventral aspect. Two corpora cavernosa, one corpora spongiosa, tunica albugenia and vessels like superficial and deep dorsal veins, dorsal artery and cavernosal arteries were identified. Doppler was used to identify vascular pattern or to see any abnormal vascularity or malformations.All our patients underwent surgical repair.Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Age wise distribution

Age group (years)	Number	P value
18-30	16	0.84
30-40	21	
40-50	4	

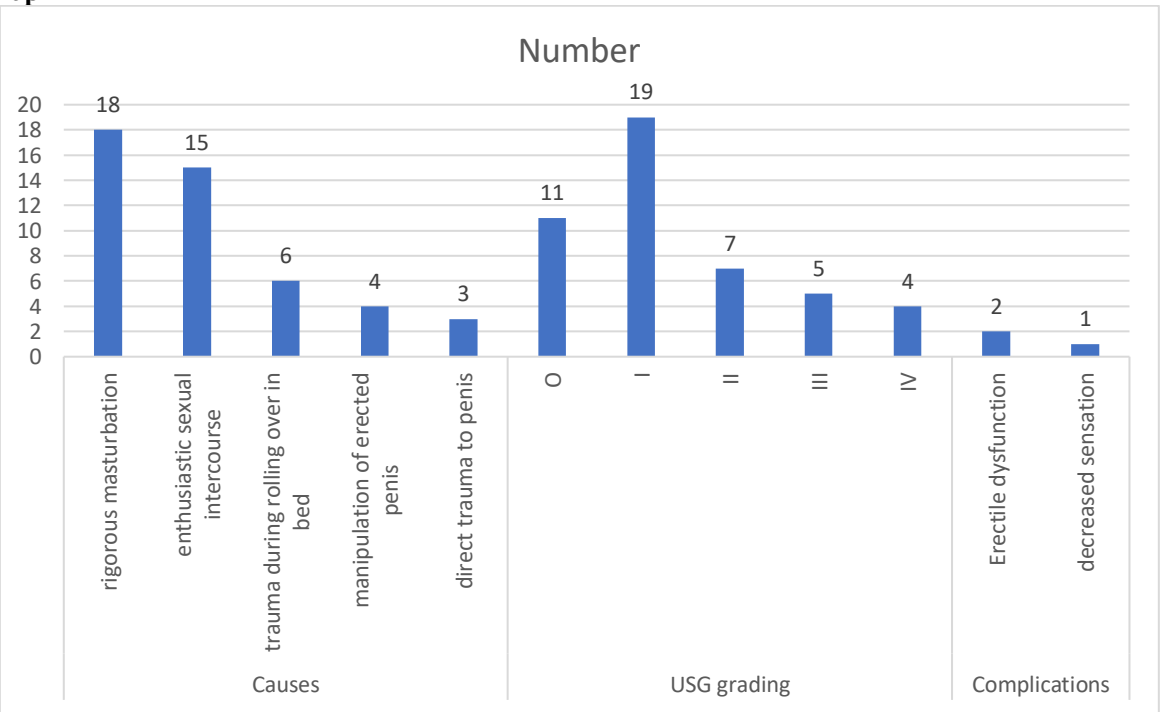
Table I shows that age group 18-30 years had 16, 30-40 years had 21 and 40-50 years had 4 cases.

Table II Assessment of parameters

Parameters	Variables	Number	P value
Causes	rigorous masturbation	18	0.05
	enthusiastic sexual intercourse	15	
	trauma during rolling over in bed	6	
	manipulation of erected penis	4	
	direct trauma to penis	3	
USG grading	O	11	0.03
	I	19	
	II	7	
	III	5	
	IV	4	
Complications	Erectile dysfunction	2	0.05
	decreased sensation	1	

Table I shows that causes were rigorous masturbation in 18, enthusiastic sexual intercourse in 15, trauma during rolling over in bed in 6, manipulation of erected penis in 4 and direct trauma to penis in 3 cases. USG grading found was grade O in 11, I in 19, II in 7, III in 5 and IV in 4 patients. Complications were erectile dysfunction in 2 and decreased sensation in 1 case. The difference was significant (P< 0.05).

Graph I



DISCUSSION

Penile trauma is a relatively uncommon condition. Most cases have a typical clinical history, but because definitive diagnosis on the basis of clinical findings may sometimes be difficult, various imaging techniques are used to confirm the diagnosis or to show the exact location and extent of injury, such as the urethra or vascular structures.[7]Cavernosography can be used to show a cavernosal tear, but this is an invasive method with potential complications and has a small risk of false-negative results when a corporeal defect seals early because of clotting. Retrograde urethrography is also an invasive technique, and several false-negative urethrographic findings have been reported.[8] Magnetic resonance imaging is an excellent imaging method for evaluating patients with penile trauma because of its multiplanar capability and excellent tissue contrast.[9] However, because of its high cost and restricted availability, it currently is not considered a routine part of the evaluation of penile trauma.Under USG, there is grading of penile fracture such as Grade O - Normal tunica albugenia seen as white echogenic covering of both corpora cavernosae without defect. Grade I - A defect in tunica albugenia seen as a wedge shape with peripheral broad base showing discontinuity in echogenic covering along with involvement of corpora cavernosa.[10] Grade II – Hematoma, seen as mixed echogenic ill- defined area on either sides of albugenia i.e.in corpora cavernosa and subcutaneously. Grade III - Hematoma of deep fascia along with corpora spongiosa involvement suggesting more severe injury. Grade IV - Injury with involvement of corpora spongiosa, urethra and vascular injury with any vascular malformation. Grade IV injury was seen in one patient only as he has manipulated his penis with intention of hurting.[11]The present study was conducted to assess penile fracture using USG.

We found that age group 18-30 years had 16, 30-40 years had 21 and 40-50 years had 4 cases. Causes were rigorous masturbation in 18, enthusiastic sexual intercourse in 15, trauma during rolling over in bed in 6, manipulation of erected penis in 4 and direct trauma to penis in 3 cases. Al-Ghazo et al[12]detected the results of immediate surgical repair of penile fracture in 14 patients The cause of penile fracture in these patients was rigorous masturbation in 4 patients, enthusiastic sexual intercourse in 3, trauma during rolling over in bed in 2 patients, manipulation of erected penis in 3 patients, during trying to lift up a watermilon by putting the erected penis in a whole made in it in 1 case, and direct trauma to erect penis in 1 patient. Only 7.1% experienced complications (decreased sensation was noticed on the left side of the penis in 1 patient). Erectile function was preserved in all patients without pain. Conclusion: Immediate surgical repair of penile fracture gives an excellent long-term outcome. Most cases of penile fracture can be diagnosed on the basis of clinical findings, Blood at the tip of the penis indicates urethral injury, and so retrograde urethrogram is indicated in such cases.

We observed that USG grading found was grade O in 11, I in 19, II in 7, III in 5 and IV in 4 patients. Complications were erectile dysfunction in 2 and decreased sensation in 1 case.Shukla et al[13] performed emergency evaluation of 15 cases of penile fractures by ultrasonography before surgery. Entire penis was scanned all along its length and circumference. Tunica albugenia was seen as white covering of both corpora cavernosa and break in its continuity is seen as wedge shape defect. Hematoma on either sides of tunica was well appreciated. After ultrasonography all patients underwent emergency surgery, the defect in corpora was well appreciated. Repair of tunica albugenia was done which confirmed findings.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that the preferred investigation for identifying penile fractures is USG since it is quick, easy to perform, and reasonably priced. This will provide others new options to prevent misdiagnosis and treatment delays.

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