Vesicovaginal reflux presenting as hydrocolpos

A 16-year-old girl presented with complaints of irregular menstrual cycles for one year. Her general physical examination was normal except for obese body habitus and her gynaecological examination was normal.

Imaging Findings:

Pelvic ultrasound was done as part of the initial radiological evaluation of the patient. Ultrasound images in a full bladder state show gross distension of the vagina by clear fluid. In the post-void state the vaginal distension is not seen. The uterine cavity is empty and the urinary bladder appears normal. In view of the transient nature of the abnormality, a functional cause appears likely. Further evaluation is done with Voiding Cystourethrography (VCUG). In the VCUG the bladder appears well-distended and a contrast-filled structure is noted posterior to the bladder, indicating contrast in the vagina. During the voiding phases and in the post-void stage, however, the vaginal distension is not seen. No abnormal communication is seen between the urinary tract and the genital tract.

Discussion:

While it is common to see minimal fluid in the vagina, it is unusual to see frank distension of the vagina by fluid, a condition referred to as hydrocolpos. This may be due to obstructive causes typically resulting from a congenital vaginal obstruction such as an imperforate hymen, vaginal septum, vaginal atresia, or cloacal anomalies. [1] Accumulation of fluid or menstrual products results in distension of the vagina in these cases. Fistulous communications between the genital and urinary tract can also cause abnormal distension of the vagina by urine. Hydrocolpos may also result from conditions without an anatomical abnormality such as retention of leaking amniotic fluid in pregnant patients, incorrect placement of a bladder catheter and reflux of urine into the vagina from the urinary tract which is called vesicovaginal reflux. [2]

The exact cause for vesicovaginal reflux is not clear. It can be seen in obese girls and may be caused by tight apposition of labial folds that cause urine to enter into the vagina. [3] It may be also seen in girls with labial adhesions. The relatively horizontal vagina in pre pubertal age, hypospadias and spastic pelvic floor muscles may play a role in the condition. The urethral opening is close to the vaginal opening and the labia majora and minora are small and in close proximity in young girls. This may cause urine to pass through vaginal opening and be retained behind the hymen. [4] A wide bladder neck and a spinning top urethra as seen on voiding cystourethrography can also be associated with vesicovaginal reflux. [5]

Vesicovaginal reflux is associated with urinary tract infections and can also contaminate the urine sample collected in patients suspected to have urinary tract infection. It is also an important cause for both daytime and nighttime
enuresis and for post-void dribbling. In some patients however, the hydrocolpos caused by vesicovaginal reflux can be seen incidentally during pelvic sonography performed for an unrelated condition. This may lead the radiologist to erroneously conclude the presence of vaginal obstruction or fistulous communication between the genital and the urinary tracts. However, the diagnosis can be made by noting the disappearance of the findings on the post-void study and the otherwise normal appearance of the pelvic organs. The patient was managed by asking her to void regularly and separate the labia majora while voiding. Follow-up ultrasound showed no evidence of hydrocolpos.

**Differential Diagnosis List:** Vesicovaginal reflux presenting as hydrocolpos, Bladder diverticulum, Urethral diverticulum

**Final Diagnosis:** Vesicovaginal reflux presenting as hydrocolpos

**References:**


Description: Ultrasound images showing frank distension of the vagina by clear fluid. The well distended state of the urinary bladder is evident. Origin: St John\'s Medical College, Hospital, Bangalore, Karnataka, India.
Description: Ultrasound images in the post void state show disappearance of the vaginal distension.
Origin: St John's Medical College, Hospital, Bangalore, Karnataka, India.
Description: A right lateral radiograph during full bladder phase of voiding cystourethrography shows contrast filling the vagina. Origin: St John’s Medical College, Hospital, Bangalore, Karnataka, India.
Description: A left posterior oblique radiograph during voiding phase of voiding cystourethrography shows no evidence of contrast refluxing into the vagina. Origin: St John’s Medical College, Hospital, Bangalore, Karnataka, India.