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RESEARCH ARTICLE

MRI IN VAGINAL ATRESIA: A CASE REPORT WITH REVIEW OF LITTERATURE.

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Abstract

Vaginal atresia can be defined as an anomaly that occurs when the lower part of vagina fails to develop normally. This congenital anomaly embodies itself as an incomplete canalization of Mullerien ducts. The defect in question usually uncovers itself thanks to a mass or pain in the lower abdominal region which is in turn a result of retention in certain genital structures or disorder of menstrual blood.
As an instance, a 15 years old patient at IbnSina hospital experienced a lower abdominal pain with presence of correct secondary sexual characteristics. Ultrasound and magnetic resonance imaging are used to scrutinize the case.

Introduction:-

Vaginal atresia is not that common defect. Uterovaginal outflow tract obstruction is a result of the defect. This takes place when the caudal portion of the vagina, contributed by the urogenital sinus, doesn't succeed to form itself. Actually a fibrous tissue replaces the caudal part of vagina (1). The prevalent clinical signs of this malformation are primary amenorrhea and cyclical pelvic pain, but no specific, which makes diagnosis not easy and mostly delayed.
MRI is thought to be a real basis for diagnosis of complicated malformations like the presence of interrelation of other malformations that could touch the genitourinary or gastrointestinal tract. Several surgical methods have been tried in the literature, but unfortunately there is significant long term decrease. This article sheds light on a patient case with pelvic MRI showing a congenital vaginal atresia. The emergency radiology department at IbnSina takes charge of this case.

Observation:-

The responsible service received a female adolescent with a history cyclical abdominal pain and primary amenorrhea. Initial examination shows that the patient in question has a pelvic mass. The slight evidence of having a hydrometrocolpos was improved by an imperforate hymen. Nonetheless, the breasts and vulva have grown normally. Pelvic ultrasonography revealed a swollen vagina and uterus with blood in the endometrial cavity, but the urinary tract was sound as ultrasound showed. Similarly, the spine and sacrum were normal, and showed no aberrations according to carried out radiographs. Depending on the MRI, there was a pelvic mass with sagittal orientation, of high signal intensity at T1- weighted indicating blood (Fig1). The distance from perineum to the fluid-filled cavity was measured to be 5 cm (Fig.2). Above the mass, we can see the cervix and the uterus cavity with functional endometrium also filled by blood (Fig.3). The diagnosis of vaginal atresia 5 cm long with functioning uterus and hematocolpus was made. Our patient evolved well after a vaginoplasty.

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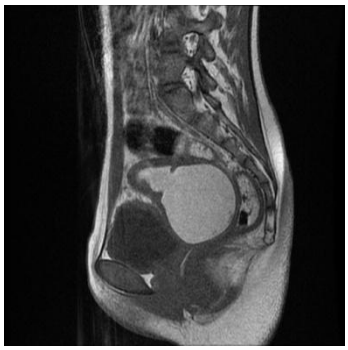

Fig 1 : sagittal T1 weighted MRI showing a pelvic mass with sagittal orientation, of high signal intensity indicating blood.

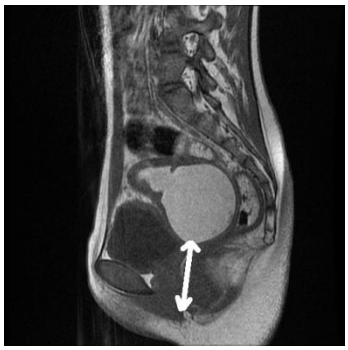

Fig 2 : Sagittal T1 weighted MRI showing the distance from perineum to the fluid-filled cavity was measured to be 5 cm

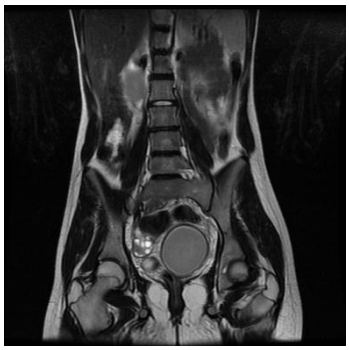

Fig 3 : Coronal T1 weighted MRI of cervix and the uterus cavity with functional endometrium filled by blood

Discussion:-

Embryology understanding is a key to analyse and deal with congenital abnormalities in a successful way. Starting from the 6th week, the embryo witnesses the development of the Mullerian ducts. The latter will devide on the distal tract, and create the ovarian tubes and the urogenital sinus, and in another step form the Muller tuberculum, from which epithelium grows up towards the Mullerian ducts. This contributes to an obliteration of the vaginal canal and formation of a rigid epithelial vaginal plate. Gaps build up by the vaginal canalization takes place by the 17th week. Mullerian ducts development process has many pivotal steps. Should the latter are obstructed malformation occurs(2)(3).

Presentation:

More often congenital vaginal atresia is experienced at puberty with abdominal pain, amenorrhea and hematocolpos. It is reported that 39 patients with the disease above are at the age average of 16. Primary amenorrhea (71%), periodic abdominalgia (41%), abdominal pain (36%), dyspareunia (10%), menstrual disorders (5%) and pelvic mass (5%) are all initial presenting indicating signs (2). As for infants previous figures are not common. Out of seven patients, due to a report, six ones with vaginal malformations combined with anorectal deformity were neonates. The majority of infant patients show lower abdominal mass, urinary or intestinal obstruction. These are caused by hydrometrocolpos (4).

Associated Anomalies:

Based on previous literature, congenital vaginal atresia may be associated to other malformations. In a report two 14 years old female adolescents combined vaginal atresia with congenital cervical agenesis, which is a rare variation of obstructive mullerian abnormalities (5). Out of 24 children with imperforate hymen and vaginal atresia, show urinary tract anomalies (6). In a report of 39 cases, 10 patients had cervical agenesis in addition to vaginal atresia. One had a uterus bicornus and double cervix and three patients had solid hymen. However, the patients were spinal malformations free (2).

Vaginal atresia was noticed in three neonates out of seven patients who showed anorectal malformations by T. wester and Al (4). In newborn girls with anorectal deformities, a good examination of the vulva is of utmost importance. In this report, the patient shows no associated deformity.

Diagnostic Evaluation:

Ultrasound was used for pelvis diagnosis and it proved effective to show some pelvis properties such as retention and its seat. Also, it was useful to detect and show renal abnormalities. However, it was less performant in the diagnosis of vaginal and urine abnormalities. Data analysis and information obtained from the ultrasound test revealed its challenge to diagnose additional pelvic complications, including hematosalpinx, tubal reflux of menstrual blood, mainly the situation of endometriosis tissue.

Ultrasonography and MRI (Magnetic Resonance Imaging) are more reliable to pinpoint the presence or absence of uterine and vaginal components and detect the presence of MRKH (Rokitansky-Kuster-Hauser) Syndrome. While

prenatal Ultrasonography has the advantage of identifying hydrometrocolpos, MRI has the capability to find and characterize the Mullerian abnormalities, to determinate the anatomy of the Mullerian system and detect the seat of the obstacle and renal failure.

Although Hysterosalpingography(HSG) has the strength to find and characterize the Mullerian malformations. Its weak imaging fails to show the vaginal atresia because of the obstruction (7).

The combination of three –dimensional pelvic images can provide a clear picture of the different abnormalities to inform proper surgical procedures on the identified area, especially at the presence of an anomaly of the vaginal tract and a proximal vaginal pouch (8).

Treatment:-
The aim of treatment is to offer to a woman who has a vaginal atresia, a genital activity similar or next to that of a normal woman, and it's based on a progressive self dilation and surgical vaginoplasty (9)(10).

Conclusion:-

The main causes that lead post-pubertal patients to visit doctors and benefit from a ultrasound are cyclical abdominalpain and primary amenorrhea.
Ultrasound represents the first-line examination, but MRI is considered as the imaging gold standard for vaginal anomalies especially before a surgical correction.

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