

HYDROMETROCOLPOS

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Hydrometrocolpos is a congenital condition in which the vagina and uterus are enormously distended by fluid secreted by the epithelium of the cervix, uterus and vagina, in the presence of an obstructing membrane or septum. A single acquired variety, due to vaginal stenosis (Markus cited by Morris¹) occurs in old women.

CASE RECORDS

An African primigravida was admitted in labour; presentation vertex; foetal heart sounds slow, rhythm regular; cervix fully dilated and membranes had ruptured; meconium escaped copiously. One hour later a female baby was born, with the umbilical cord wound round the neck, and moderately asphyxiated. Cutaneous petechiae were seen in the baby's face next day. The baby's abdomen became increasingly distended during the next 4 days, interfering with respiration. There was no vomiting. The bowels acted normally. Micturition was normal. On examina-

tively small anteverted uterus. The uterine tubes, on either side of the apical knob were diagnostic (Fig. 2). A mid-line incision was made in the anterior wall of the cystic mass, and about 100 ml. of fluid resembling liquor amnii was evacuated from the ballooned vagina. Vaginal examination located an accluding septum about 1 cm. behind the hymen. The septum was first palpated bimanually from above and below, and then punctured with artery forceps. A catheter was passed from the vulva and tied in. The abdominal vagina and the abdominal wound were then closed without drainage.

After the operation 200 ml. of blood was given intra-tibially. Crystalline penicillin, 50,000 units 6 hourly, and streptomycin, 5 mg. 12 hourly, were given intramuscularly for 6 days. The vaginal catheter was removed on the 4th day. Further courses of antibiotics were continued.

On the 17th day partial separation of the wound edges required secondary suture. The baby had bouts of vomiting and diarrhoea and intermittent pyrexia.

The abdominal swelling had subsided rapidly and soon became impalpable. A subsequent attempt to reinsert the catheter failed. Subcutaneous infusion of electrolytic fluids were maintained as required.

The baby, however, eventually lost weight, developed cellulitis of the thighs and face, and died in a state of inanition at the age of 69 days. There were no other congenital abnormalities noted in this case.

DISCUSSION

Incidence

Most text-books and encyclopaedias do not even mention the name Hydrometrocolpos or Hydrocolpos. Gross,² however, described the condition in his *Surgery of Infancy and Childhood* under the heading 'Diseases of the Genital Tract' and Edith Potter³ in her *Pathology of the Fetus and Newborn*.

Commandeur,⁴ in 1904, described 1 case and reviewed 9 others, and Spencer⁵ recorded 1 case in 1916. In 1940, after a silent gap of 24 years in the literature, Mahoney and Chamberlain⁶ described 3 cases of their own, and Kereszturi,⁷ recorded 1 case. In the next year Bowen⁸ and Althoff⁹ each described a case. Subsequently Rosenblatt and Wooley,¹⁰ Morris,¹ Maliphant,¹¹ Sen¹² and Brews¹³ each described a single case. We have therefore been able to trace 22 cases in all.

Age Incidence

Hydrometrocolpos occurs at two age periods, viz. neonatally and in the prepubertal period. Sen¹² found that the neonatal cases ranged from 1 day to 11 weeks old. In the prepubertal group, Althoff,⁹ Bowen⁸ and Brews¹³ detected their cases at the ages of 14, 12 and 15 years respectively.

Pathology

The condition results from complete vaginal obstruction. This can be caused by an imperforate hymen or by vaginal atresia at a higher level forming a septum or retrohymenal membrane. The septum has been described by Mahoney and Chamberlain,⁶ and Bonnet;¹⁴ it was present in our case.

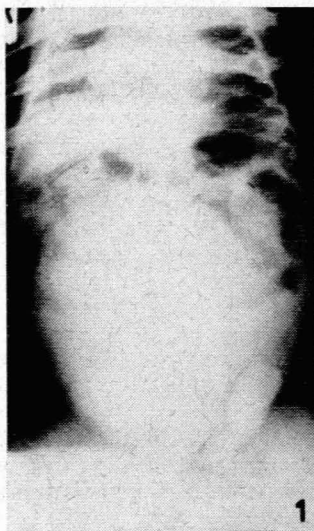


Fig. 1. X-ray of patient.

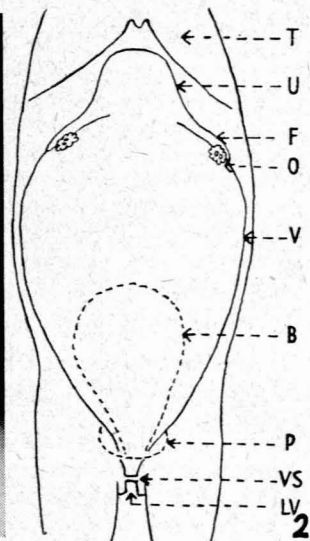


Fig. 2. Diagrammatic sketch of findings. T = thorax, U = uterus, F = fallopian tube, O = ovary, V = vagina, B = bladder, P = pelvic brim, VS = vaginal septum, L V = lower end of vagina.

tion there was a prominent bulge in the middle of the epigastrium with overlying skin veins. This swelling was firm and immobile and its shelving borders were ill defined. The upper abdominal wall was fairly tightly stretched over the mass. Straight X-ray of the abdomen showed outline of a large cyst in the abdominal cavity pushing up the diaphragm (Fig. 1)—no opaque medium was used. Respiration was almost entirely thoracic, with increased rate and excursions.

Laparotomy on the 5th day (E.R.). Under local anaesthetic the abdomen was opened through a right paramedian incision. A large fusiform tumour was found, filling the peritoneal cavity. Tapering downwards it filled the pelvic brim and its base was fixed to the floor of the pelvis. The apex was formed by a rela-

Excessive secretion of mucoid fluid takes place from the genital glandular tissue, mainly the cervical glands. It is known that in the presence of complete vaginal obstruction, normal secretion does not usually produce hydrometrocolpos. The current theory is that the excessive secretion is the result of raised concentration of maternal oestrogens in the foetal circulation; the absence of uterine bleeding is explained on the basis that the lining of the genital tract includes vascular and glandular components which may react independently or simultaneously to oestrogen stimulation according to their reactivity to hormonal stimulation. According to Sen¹² this theory has been confirmed by Markee (1936), Daron (1936), and Kaiser (1948).

During foetal and neonatal life the cervix is larger than the body of the uterus and probably secretes more actively. Both the cervix and body show increased secretory function in response to maternal oestrogens,¹⁵ the vaginal epithelium matures, thickens and becomes keratinized, and the vaginal secretion becomes acid. The vaginal epithelial cells contain glycogen. Sen¹² points out that the same changes also occur in the prepubertal stage, thus coinciding with both the age period at which hydrometrocolpos is known to occur.

Mahoney and Chamberlain⁶ confirmed histologically that there was increased activity of uterine glands and maturation of vaginal epithelium in their cases.

The vagina of the newborn is about 1-2 cm. long and 5-6 mm. wide (Gross). In hydrometrocolpos the anatomy of the genital tract is so grossly distorted that it may be unrecognizable unless the uterine tubes and ovaries are identified at the apex of the mass. The contained fluid is usually milky and 'chylous', but may be clear like liquor amnii. The distended vagina displaces the bladder forwards and upwards. The urethra and bladder neck are stretched and may be compressed. Kereszturi's case developed urinary retention 1 month old, laparotomy revealed the cause. Pressure on the uretero-vesical junction may produce bilateral hydronephrosis.^{1,7} Infection further complicated Kereszturi's case, causing pyelonephritis.

Morris's case,¹ 7 weeks old, developed dysuria and constipation. There was also occasional blood in the stool. Intussusception was diagnosed; laparotomy revealed the unexpected cause. In this case there was also extensive oedema of the lower half of the body, caused by obstruction of the large veins. Morris emphasizes that hydrometrocolpos may remain undiagnosed until puberty, only to appear clinically as haematocolpos. Althoff,⁹ Bowen⁸ and Brews¹³ detected their cases only a few months before the onset of menstruation.

Brews's case was 15 years old when she developed acute retention of urine. She appeared to have a classical, fairly large haematocolpos. Incision of the bulging vaginal membrane released 40 oz. of creamy white fluid. The fluid was sterile, and contained a few leucocytes. She menstruated normally 6 months later. Brews asks: 'Does this fluid represent a form of so-called "white menstruation" where the endometrium is not being subjected to, or does not respond to the influence of, a haemorrhagic factor, or does it represent an accumulation of non-menstrual fluid'?

Embryology

The Vaginal Septum. During the development of the embryo the paramesonephric ducts meet and fuse in the

urogenital septum, producing the uterovaginal canal. The tip of this canal forms the soiled vaginal cord. This cord unites with the sinovaginal bulbs, forming the vaginal plate. This plate is then canalized by the uterovaginal canal while the fused sinovaginal bulbs break down from below. According to Koff,¹⁶ the lower 1/5th of the vagina is formed by the sinovaginal bulbs. It seems likely that the abnormal vaginal septum is due to failure of canalization at the level of the vaginal plate.

Imperforate Hymen. According to Koff's view¹⁶ of the formation of the lower vagina, the hymen is a persisting membrane between the canalized bulbs and the urogenital sinus.

Clinical Picture

Reviewing 11 cases, Sen¹² found urinary retention in 2, abdominal tumour in 8, intestinal obstruction in 2. His own case and 2 others presented a vaginal bulge which became more prominent when the baby cried. Sen's case also had an imperforate anus. Respiratory distress was a feature in our case. In the prepubertal group backache and abdominal pain have been recorded.

Diagnosis

1. There is a swelling in the midline of the abdomen, arising from the pelvic floor. Rectal examination is essential.
2. Vaginal examination will demonstrate the imperforate vagina or vaginal septum. There may be an obvious bulge in the vagina when the baby cries. In the present case a bulge was not seen.
3. Puncture of the bulging membrane will release fluid similar to that following 'rupture of the membranes'.
4. Radiography was employed by Mahoney and Chamberlain,⁶ and by Rosenblatt and Woolley.¹⁰ Diodrast was injected into the hymenal bulge and the diagnosis was verified pre-operatively.

Differential Diagnosis

Morris¹ emphasizes that hydrometrocolpos is a surgical emergency deserving a place in the usual list of 'acute abdomens'.

When a hypogastric swelling is present, a distended bladder (e.g. due to congenital urethral obstruction such as urethral valves) must be excluded; urachal cyst must also be excluded.

Intussusception was considered in Morris's case.

In the epigastrium one may consider the obstructive group, e.g. congenital hypertrophic pyloric stenosis, duodenal stenosis or atresia, annular pancreas, malrotation and duplication of gut segments and their possible sequelae.

In the neonatal group other intra-abdominal swellings that may present in the mid-line are mesenteric cysts, teratoma and sympatheticoblastoma.

In the prepubertal group haematocolpos will be suspected. Hydatid cyst must be borne in mind.

TREATMENT

As a safety measure a needle is introduced and fluid is aspirated before a cruciate incision is made in the membrane. In some cases the obstructing membrane is less conspicuous and, owing to the proximity of vital structures, an abdomino-

perineal operation may be advisable. Then bimanual digital palpation should guide the perforating instrument safely between the urethra and the rectum. A catheter is inserted into the vagina and drainage should be maintained, for weeks or months if necessary, in order to ensure patency of the membrane.² Antibiotics may have to be administered over long periods.

Prognosis

This depends on the severity of the pressure effects. Sen¹² quotes a case who died on the first day of life from intestinal obstruction.

Early diagnosis and simple drainage play an important part in the prognosis.

Morris's case¹ underwent laparotomy, and then developed rupture of the abdominal wound and faecal fistula and died. One of Mahoney and Chamberlain's cases⁶ underwent panhysterectomy and died.

Intercurrent infection is a great danger. Kereszturi's case⁷ developed pyelonephritis, ending in death.

SUMMARY

1. A case of hydrometrocolpos in an African infant is recorded.
2. Available literature has been reviewed.
3. A plea is made for the wider recognition of this acute abdominal emergency.

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