DYSTOCIA DUE TO DILATATION OF THE FOETAL URINARY BLADDER: A CASE OF SINGLE UMBILICAL ARTERY

by

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Reports of such gross dilatations of the urinary bladder as to interfere with delivery of the foetus are limited (Edgecombe, 1930; Savage, 1935). France and Back (1954) reviewed 22 cases of foetal ascites associated with dilatation of the urinary tract, out of which urethral obstruction was demonstrated in 18 cases. They attributed ascites to transudates from thinned out areas in the dilated bladder or ureters or from thin-walled cysts on the kidney surface. The present communication describes a case of gross dilatation of the urinary bladder associated with ascites, both of which required puncturing and drainage to allow the vaginal delivery.

CASE REPORT

A primigravida of 25 years age was admitted to the Obstetric ward of Kamla Raja Gwalior Hospital with labour pains at 22 weeks of pregnancy. Examination revealed height of the uterus corresponding to 28 weeks of pregnancy with ruptured membranes. A history of attempted abortion with dry ginger in hot water at sixth week of pregnancy was forthcoming. At the beginning of the fourth month she developed oedema on feet with a blood pressure of 180/130 mm Hg, and was treated continuously with Adelphane Esidrex, intermittent Lasix and tranquilizers.

After hospitalization at 22 weeks of pregnancy, the urine was negative for albumin and sugar, and was sterile upon culture. Her blood urea was 35 mg%, blood sugar 68 mg, total white cell count 14,000/c.mm and ESR 36 mm. The blood pressure was normal. Foetal movements were neither ever felt by the mother nor by the doctors. The labour had already set in, and delivery of the foetus started with vertex presentation. After disengagement of the head the labour was obstructed. The presumed ascites responsible for obstruction was punctured and drained to allow vaginal delivery.

The aborted male foetus (Fig. 1), with collapsed abdomen, weighed 680 g, and had a sitting height of 21.8 cm. The battledore placenta weighed 265 g. The cord was 79 cm long and had only one umbilical artery. The head and neck of the foetus were slightly oedematous and partly macerated; ears were low-set. The thoracic and abdominal viscera were pushed upward and compressed by the dilated bladder and ascites. Heart and lungs were normal, but the alimentary tract with liver and pancreas showed an improper fixation; loops of small intestine were suspended to the upper part of the posterior abdominal wall by a short pedicle and the large intestine was suspended by a median dorsal mesentery, both resembling the primitive gut. The anus was patent, but the barely discernible penis had no urethra. Both the penis and scrotum were merged with the stretched skin of the abdominal wall. There was no evidence of any chronic peritonitis.

The urinary bladder, demonstrated a gross dilatation (Fig. 2) which caused marked distension of the abdomen. The abdominal muscles, though stretched, were normal. Upon filling the bladder with water, it assumed a trilobed shape, with a right and a left upper lobes and a lower median lobe. It extended retroperitoneally up to the umbilicus anteriorly, up to very near the diaphragm posteriorly, and up to the flanks on each side; the peritoneal surface of the bladder formed three large bulgings which filled greater part of the distended abdomen. The bladder measured 14 cm vertically and 14.4 cm transversely. The testes and vasa deferentia were found fused to the peritoneal surface of right and left bulgings of the urinary bladder. The internal urethral meatus was missing and the urethra along its entire length was atretic. The possible associated ascites was considered because the distended bladder failed to completely stretch the abdominal wall.

The kidneys and ureters appeared normal.

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The left suprarenal gland was larger than the right.

The single umbilical artery (Fig. 3) belonged to the left side. It was a direct continuation of the abdominal aorta. A little below the aortic opening of the diaphragm and after the origin of the coeliac trunk, the aorta deviated toward the left and coursed behind the left bulge of the urinary bladder where it gave off the superior and inferior mesenteric and left lumbar arteries. Distal to the origin of inferior mesenteric artery the aorta continued as left umbilical artery which coursed on the left surface of the dilated bladder to reach the umbilicus.

Discussion

The present case is an example of atresia of the urethra resulting in a gross dilatation of the urinary bladder which in turn caused the superadded ascites by exudation. The review of 22 cases of neonatal ascites associated with urethral obstruction by France and Back (1954) included 2 cases of atresia of the urethra; a third case that had urethral atresia 5 cm below the neck of the bladder demonstrated a communication between the bladder and large intestine.

None of the previous reports attempted to find out, nor suggested, any possible cause of the urinary abnormality, although a common association of the genitourinary defects with single umbilical artery is profusely documented (Singh *et al*, 1970). The present author (Chaurasia, 1974) recently established a cause-effect relation between the single umbilical artery and its associated diverse congenital defects. It was suggested that developmental defects of the abdominopelvic viscera, lower limbs, and central nervous system could be attributed to replacement of the abdominal aorta by the umbilical artery; the anterior midline defects, such as exomphalos, ectopia vesicae, extroversion of cloaca, and abnormalities of the external genitalia, were due to imperfect growth of the umbilical mesoderm; and the cardiovascular anomalies were possibly produced by the resultant haemodynamic disturbance. Presence of a single umbilical artery and replacement of the lower abdominal aorta by it in the specimen described here are strongly suggestive of a causative role of the umbilical anomaly in the genesis of the defect. It is difficult to incriminate a precise teratogenic influence by the indiscriminate and heavy medication during pregnancy.

Summary

A male foetus with unusually large abdomen was aborted at 22 weeks of pregnancy by a primigravida of 25 years age. Abortion was attempted unsuccessfully at 6th week of pregnancy. From third month on she was continuously treated heavily for oedema and hypertension. Vaginal delivery of the foetus was made possible by puncturing the abdomen and draining the accumulated fluids. Necropsy of the foetus revealed a left single umbilical artery, a grossly dilated urinary bladder consequent to atresia of the urethra, evidence of associated ascites, and malrotation of the gut. The genitourinary defects are correlated with single umbilical artery.

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References

1. Chaurasia, B. D.: Teratology, 9: 287, 1974.
2. Edgecombe, K.: J. Obst. & Gynec. Brit. Emp. 37: 832, 1930.
3. France, N. E. and Back, E. H.: Arch. Dis. childh. 29: 565, 1954.
4. Savage, J. E.: Amer. J. Obst. & Gynec. 29: 276, 1935.
5. Singh, S., Sanyal, A. K. and Gangrade, K. C.: J. Anat. Soc. India 19: 90, 1970.

See Figs. on Art Paper VI