arteries of experimental animals without dietary manipulation. It provides further evidence in favour of the hypothesis that atherosclerosis and deranged carbohydrate metabolism are causally linked.

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Medical Memoranda

Thrombectomy for Renal Venous Thrombosis in Infant of Diabetic Mother

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Renal venous thrombosis can occur in newborn infants of diabetic and "prediabetic" mothers (Avery *et al.*, 1957; Takeuchi and Benirschke, 1961; Stark, 1964; Aurelius, 1969). In this paper we describe successful treatment by thrombectomy in an infant with thrombosis of the renal veins and inferior vena cava.

CASE REPORT

A male infant was born on 1 June 1968 to a 33-year-old woman in whom diabetes mellitus had been diagnosed during this, her third, pregnancy. Treatment consisted of metformin and dietary carbohydrate restriction. Surgical induction was performed at 35 weeks' gestation because of pre-eclamptic toxæmia and hydramnios. The baby was delivered normally but was mildly asphyxiated at birth, with an Apgar score of 6 at one minute.

The infant weighed 3.8 kg. and showed the physical features of infants of diabetic mothers. Hypoglycaemia (blood sugar 8 mg./100 ml.) and respiratory distress were early problems and responded to treatment. Pooled human milk was fed by nasogastric tube from the age of 5 hours. Though respiration improved, cyanosis occurred whenever the ambient oxygen concentration was reduced to less than 30%. On the fifth day a rounded left renal mass 8 by 6 cm. in size and later a smaller right-sided renal mass, were felt. Dilated veins appeared on the abdominal wall. The blood urea level was 142 mg./100 ml., the platelet count was 95,000/cu.mm., and the urine contained numerous red blood cells.

Contrast radiography of the inferior vena cava showed narrowing of the lumen, and an extensive collateral circulation was present. There was no retrograde filling of either renal vein. Faint nephrograms confirmed the bilateral renal enlargement.

Open disobliteration of the inferior vena cava and renal veins was carried out on the sixth day. Clots and pultaceous material were removed. Suction catheters were passed up and down the inferior vena cava and into both renal veins. Free flow of blood was obtained from both ends of the inferior vena cava and the left renal vein, but not from the right renal vein in spite of an apparently satisfactory disobliteration. The gross enlargement of the kidneys was confirmed, but in order to preserve the collateral circulation the overlying peritoneum was not disturbed. Histological examination of the clots showed recent thrombus with no evidence of organization.

Postoperative progress was satisfactory. Within three days the kidneys were of normal size, the blood urea was 38 mg./100 ml., and the urine was normal. The creatinine clearance on the tenth

postoperative day was 39 ml./min./1.73 sq.m. and the platelet count 300,000/cu.mm. We attributed the baby's earlier thrombocytopenia to the consumption of platelets during the intravascular coagulation. Neither cyanosis nor respiratory difficulty was present after the operation.

The baby's renal function improved, the creatinine clearance of 71 ml./min./1.73 sq.m. being within the normal range for his age at 8 months. Intravenous pyelography at the age of 4 months showed normal kidneys with good excretion of dye; slight perirenal calcification present on the left side later disappeared. The baby's blood pressure, blood urea levels, and urine remained normal.

COMMENT

The aetiology of renal venous thrombosis in the infants of diabetic and prediabetic mothers was discussed by Avery *et al.* (1957), who suggested that abnormalities of the renal capillary vasculature might be present, while Takeuchi and Benirschke (1961) thought that intermittent fetal glycosuria led to haemoconcentration and thrombosis within the kidney. Various mechanisms exist whereby these infants may be at risk of intravascular coagulation. Placental damage may allow placental thromboplastin or other coagulation initiators to pass into the fetal blood, while in poorly controlled diabetes certain free fatty acids and phospholipids may cross the placenta to influence the infant's platelet function.

Nephrectomy, conservative management (Stark, 1964; McFarland, 1965; *Lancet*, 1966) and heparin (Stark, 1964) have been used successfully in treatment.

We believe that thrombectomy is indicated in selected cases—for example, where the inferior vena cava is involved. Rapid resolution of the renal enlargement in the present case and the baby's subsequent progress appear to support our view.

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