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RENAL AND AXILLARY THROMBOSIS IN AN INFANT OF A DIABETIC MOTHER*

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The increased incidence of thrombosis or thromboembolic phenomena in infants of diabetic mothers compared to infants of nondiabetic mothers has been widely acknowledged[1], but although renal vein thrombosis is common, gangrene of an extremity has rarely been noted[2-5].

Here we describe the case of a newborn infant of a diabetic mother who developed renal vasculary thrombosis and gangrene of the right arm shortly after birth. It is on account of the rarity of this clinical occurrence that we wanted to present the case of this infant.

Case Report

A 4200 gram male infant was born at 40 weeks gestation to a 34-year-old, class A diabetic mother. At one minute the Apgar score was 10. One hour after delivery the infant's right arm was pale in color, cyanotic and cold. On physical examination weight was found to be 4200 grams, length 51.5 cm, head circumference 36 cm, chest circumference 35 cm, respiration rate 32/min, pulse 138/min and rhythmic, and temperature 36 °C. The infant's condition was poor. He was hypoactive; Moro and sucking reflexes were weak. The right axillary pulse was not palpable, and there was an intraabdominal mass, 8 x 8 cm in diameter, palpable in the right flank.

Laboratory studies revealed that hemoglobin was 18.75 g/dl, hematocrit was 61%, and the leukocyte count was 22000/mm^3 with polymorphonuclear cells predominant, thrombocytes were adequate. Urinalysis revealed that pH was 7,

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specific gravity 1020, protein ++ and sugar negative. Microscopic examination of the urine revealed profuse erythrocytes. Arterial pressure on the left side was 107/70 mm/Hg. Blood sugar, prothrombin time, partial thromboplastin time and the serum fibrinogen level were normal; the mother's thrombocyte aggregation with ADP adrenalin and collagen were normal. An intravenous pyelogram of the infant revealed an enlarged, nonfunctioning right kidney, and this was confirmed by ultrasonography. Three hours after delivery the right axillary arterial organized thrombosis was removed surgically, Heparin was given intravenously 50 units per hour. Thrombocytopenia appeared at age 5 days; then the hematuria, hypertension and thrombocytopenia all gradually disappeared. At the age of 12 days, the right forearm was amputated because of the gangrene which was subsequently confirmed in histo-pathological examination (Figure 1). The abdominal mass disappeared and at this point sonography revealed a normal right kidney. The patient was discharged when 42 days old in good health. He was subsequently seen at 4 months of age when neurologic and developmental examination revealed nothing unusual.

Figure 1

Gangrenous changes in the right forearm.

Discussion

Gross[6], in a review of previously reported cases together with six of his own, discussed several of the causes of arterial embolism and thrombosis in infants. These were sepsis, congenital heart disease, birth trauma and direct trauma to the vessel by vein puncture, resulting in spasm and thrombosis. In our case, since there were no signs of sepsis or congenital heart disease, and since the delivery of the patient was uneventful, and there was no trauma to the vessel, these were clearly not the responsible factors. In recent years, protein C deficiency has been thought to be a cause of thromboembolic phenomenon in infants of nondiabetic mothers[7,8]. But it is not known whether or not transient protein C deficiency is present in the infants of diabetic mothers. Persistant protein C deficiency was not considered in our case because there was no recurrent thromboembolism, a common circumstance in this condition. Moreover, our hospital does not have the facilities for studying the protein C level and so in this respect our data is incomplete. Another condition which must be considered here is antithrombin deficiency. When this is deficient there is recurrent thromboembolism, but to date there have been no reports of this deficiency in infants of diabetic mothers.

There is an increased risk of thrombosis in the newborn offspring of diabetic mothers, but multiple thrombosis in infants of diabetic mothers is an infrequent finding[1-3]. Venous thrombosis was present in 45 newborn infants in a series of 4000 cases reviewed, and of these 15.8% were the infants of diabetic mothers[1].

Similarly, there are many reports of renal vein thrombosis in the infants of diabetic mothers but peripheral thrombosis is infrequent[1-3]. We were able to find only two cases in medical literature of infants of diabetic mothers with both renal vasculary thrombosis and gangrene of an extremity[5,10], similar to our case. In a case reported by Valderrama et al[5] the patient was born to a class A diabetic mother, and on postmortem examination the left adrenal and renal veins and the right cubital artery were found to be occluded by thromboses. In the other case, reported by Ward[10], the patient presented in the immediate postpartum period with a renal vein thrombosis and a gangrenous lesion of the right forearm. Similar to our case there was a mass in the right flank which gradually decreased over the space of a week, and presently the findings of urinalysis returned to normal. The right forearm was amputated. Histologic studies of the amputated forearm revealed an area of gangrenous tissue. The etiology of the thromboses of the infants of diabetic mothers is not known. Polycythemia, decreased extracellular fluid and transient dehydration in the first day of life are among the suggested causes[11]. In a study on increased synthesis of platelet malonyldialdehyde, platelet hyperfunction and increased prostaglandin endoperoxidase was found in an infant of a diabetic mother[12]. In our case there was no clear explanation for the multiple thromboses other than the mother's diabetic condition.

Summary

Renal vein thrombosis is common in infants of diabetic mothers. Other lesions, such as gangrene of an extremity, have also been reported, but peripheral gangrene associated with renal vein thrombosis has rarely been seen. The case of an infant of a diabetic mother who presented in the immediate postpartum period with a gangrenous lesion of the right forearm and unilateral renal vascular thrombosis is presented.

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