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Case of Infrarenal Aortic Thrombosis in Neonate: A Rare Case Report

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Abstract

Infrarenal aortic thrombosis is a rare but life-threatening condition in neonates. We present a case of a term female neonate with unusual presentation of feeding refusal, inconsolable crying, and bluish discoloration of the left lower limb. Imaging revealed an extensive thrombus in the infrarenal abdominal aorta and major branches, leading to acute limb ischemia and gangrene. Early diagnosis, aggressive management of hypernatremic dehydration, and supportive care were initiated. This case highlights the importance of prompt vascular evaluation in neonates presenting with limb discoloration and feeding difficulties, particularly in the setting of risk factors such as dehydration, meconium staining of amniotic fluid and faulty feeding practices.

Keywords: Blood Clot, Infrarenal Aortic Thrombosis, Potential Ischemia

Introduction

Infrarenal abdominal aorta thrombosis, a rare but potentially life-threatening condition, involves the formation of a blood clot (thrombus) within the abdominal aorta below the kidneys, leading to reduced blood flow and potential ischemia**.** The incidence of thrombosis is lower in children than in adults, but is associated with high rates of morbidity and mortality. Spontaneous aortic thrombosis is rare disease in neonates even though some form of thromboembolic disease is diagnosed in 5.1/100,000 live births, they are often venous in location. Aortic thrombosis is very rare and is confined to 2%–3% of such patients.[1]

Infants, till 6 months of age, have lower levels of the Vitamin-K dependent coagulation factors II, IX and X as compared to adults. Levels of thrombin inhibitors, such as antithrombin, proteins C and S, heparin cofactor II and plasminogen are low at birth. Protein S level approaches adult value by the age of 3-6 months, but protein C levels remains low during childhood. In newborns compared with adults, thrombin generation is delayed and decreased, probably due to low prothrombin level. The incidence of thrombosis is maximal in infancy and during adolescence. This report describes a rare case of infra-renal aortic thrombosis in a 6 day old neonate.

Presentation of Case

A 2.0 kg term neonate (FCH) born to primiparous mother delivered via normal vaginal delivery. The delivery was complicated by meconium stained amniotic fluid. Patient was presented to emergency wing of J.K. Lon hospital, Kota on day 6th of birth with complaint of refusal to

feed, inconsolable crying and history of faulty feeding (goat milk feeding).

On visual inspection, bluish discoloration left lower limb along with muscular atrophy was noted. Upon admission the baby was alert with pulse rate of 140 bpm, respiratory rate was 48/min, saturation was 99% on upper-limb pulse oximetry, and blood pressure in both upper limbs was 62/34 (49) mmHg. On palpation both the lower limb was cold and left lower limb had bluish discoloration with feeble femoral pulses bilaterally, more pronounced on the right than the left.

Laboratory investigations were within normal limits except for platelet counts 0.53 lakh/cumm and Na+ was 171 mEq/l. Arterial colour doppler of abdominal aorta and bilateral lower limb vessels was conducted, which revealed thrombus in infra renal aorta occluding >80% of its lumen with thrombus in left common iliac and left common femoral vessels completely occluding their lumens. Patient was diagnosed with severe hypernatremia with dehydration with pre renal AKI with gangrene of left lower limb. Neonate was referred to higher centre for further management.

Neonate was admitted in Sir Padampat Institute of Neonatology and Pediatric Health where initial investigations showed hypernatremia along with deranged coagulation profile. CT angiography of aorta was conducted which was suggestive of complete non opacification of infra renal abdominal aorta bilateral common iliac, internal iliac and proximal external iliac arteries with pelvic collaterals suggestive of thrombus.

Patient was started on intra venous heparin, aspirin and warfarin per orally and was discharged on request of parents against medical advice. Patient then presented to outdoor facility of Department of General Surgery, Kota with complaints of high grade fever, blue left lower limb and refusal to feed.

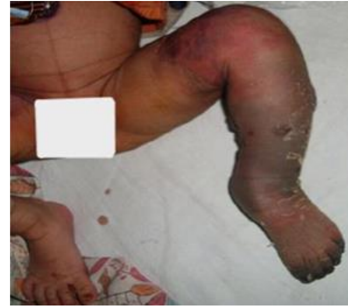

Figure 1: Gangrenous changes in left Lower limb on day 10.

Upon admission, the patient, now 10 days old with laboratory investigations showing persistent hypernatremia with septicaemia and thrombocytopenia. Patient was kept in observation period for 48 hours while continuous heparin infusion was maintained along with antibiotic support, and follow-up Colour Doppler studies confirmed the presence of thrombi; no progression nor reduction in the size of the thrombi was noted. Patient was then planned and operated for left lower limb below knee amputation under general anesthesia. After day 2 post surgery patients' fever subsided, she started feeding actively and the leukocyte count returned to normal range.

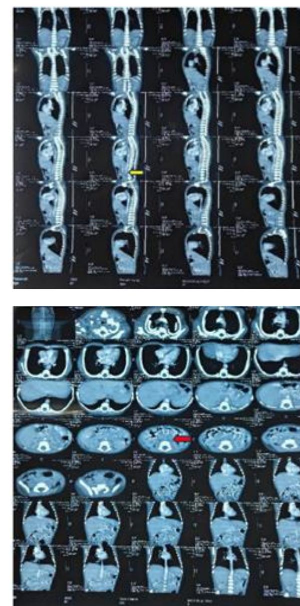

Figure 2: The abdominal CT angiography

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A) Sagittal view showing abrupt cutoff of infrarenal aorta (yellow arrow) at level of l2-l3 vertebra.

B) Axial view showing non enhancement of infrarenal aorta due to thrombus (red arrow).

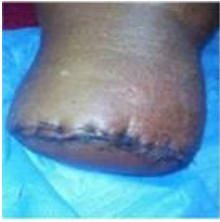

Figure 3: Post below knee amputation of left lower limb.

Discussion

Aortic thrombosis is associated with a number of risk factors, including coagulopathy, hypoxia, patent ductus arteriosus, polycythemia, maternal diabetes, and umbilical artery catheterization. Umbilical artery catheterization is the most common risk factor [2]. An indwelling umbilical catheter is the single highest risk factor for aortic thrombosis; septicemia and dehydration are other risk factors that increase the chance of thrombosis [3].

Spontaneous aortic thrombosis occurs in asphyxia, sepsis, meconium aspiration, extreme prematurity, hypernatremic dehydration, and thrombophilia. [1]

The clinical presentation can be subtle, including diminished femoral pulses, pallor, cold lower limbs, and in severe cases, signs of ischemia or renal failure. In our patient, absent femoral pulses with discoloration of the lower extremities prompted urgent imaging. Doppler ultrasonography remains the first-line imaging modality due to its non-invasive nature and real-time vascular assessment. In this case, the diagnosis was confirmed via Doppler, followed by a contrast-enhanced CT angiogram for detailed anatomical delineation.

Management options are not standardized and depend largely on the extent of thrombus, hemodynamic stability, and presence of end-organ damage. Therapeutic strategies include systemic anticoagulation, thrombolysis, surgical thrombectomy, or hybrid endovascular approaches [4].

Our patient was non responsive to management with low-molecular-weight heparin (LMWH), with no improvements in laboratory parameters and clinical status. This conservative approach discontinued to avoid major sequalae like septicemia and mortality.

While neonates appear stable in early phases, thrombus progression leads to rapid deterioration. When there are significant or progressive ischemia alterations, early surgical surgery is recommended. More frequently, there has been a shift toward auto amputation or spontaneous slough or toward surgery and restricted amputation [5].

This case underscores the importance of maintaining high clinical suspicion for vascular compromise in neonates presenting with vast variety of symptoms. It also highlights the need for multidisciplinary management involving neonatologists, pediatric surgeons, and hematologists

Further documentation and study of such rare presentations are necessary to develop evidence-based guidelines for diagnosis and treatment. Due to its rarity, every reported case contributes significantly to the growing body of knowledge on neonatal vascular thrombotic disorders.

Conclusion

Spontaneous infrarenal aortic thrombosis in neonates is a rare but life-threatening condition [6]. It should be considered in neonates presenting with limb discoloration, especially in the presence of risk factors such as dehydration and improper feeding. Early diagnosis using Doppler imaging and multidisciplinary management can improve outcomes, although prognosis may still be guarded.

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