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Neonatal Anemia Revealing an Adrenal Hemorrhage

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Abstract

Adrenal hematoma is a rare condition with highly variable clinical manifestations, ranging from completely asymptomatic cases to specific signs. Abdominal ultrasound is the key examination for diagnosing and monitoring neonates. We present a case of adrenal hematoma diagnosed following neonatal anemia.

Keywords

Adrenal Hematoma, Anemia, Abdominal Ultrasound

1. Introduction

Adrenal hematoma is a rare condition in the neonatal period [1]. The clinical manifestations are diverse and non-specific, ranging from severe jaundice to acute adrenal insufficiency. The diagnosis is based on abdominal ultrasound. We report a case of adrenal hematoma presenting as neonatal anemia.

2. Clinical Case

The patient was a male newborn with no significant family history. He was born from a poorly monitored pregnancy, presumed to be full term, to a 38-year-old mother, G3P3A0, with blood type B Rh+. The infectious history was positive, including premature rupture of membranes for 10 hours. The delivery was obstructed, vaginal, with uterine expressions. **The Apgar score was 6/10 at one minute, 8/10 at five minutes, and 9/10 at ten minutes.** Birth weight was 3400 g.

He was admitted on the third day of life for the management of severe jaundice. The clinical examination at admission revealed generalized and intense cutaneous-

mucosal jaundice against a pale background. The patient was afebrile with a normal neurological exam. There was no hepatosplenomegaly. The stool and urine were of normal coloration. There was no serosanguineous swelling.

The paraclinical workup revealed a high total serum bilirubin level (212 µmol/L, with 198 µmol/L as free bilirubin). The complete blood count showed a hemoglobin level of 9 g/dL, white blood cells at 11,500/mm^3, and a platelet count of 535,000/mm^3. C-reactive protein was at 28 mg/dL. The baby had the same blood group as the mother (B+). The Coombs test was negative. The prothrombin time is 85%. The activated Partial Thromboplastin Clotting Time is 30 sec.

The baby received a blood transfusion and underwent intensive phototherapy as well as antibiotic treatment with third-generation cephalosporins and gentamicin. Due to the obstructed nature of the delivery, an abdominal ultrasound was performed, revealing a right adrenal hematoma measuring 5 cm × 3.2 cm. Based on the ultrasound findings, a blood electrolyte panel was conducted, which returned normal results with a sodium level of 135 mmol/l, potassium level of 3.7 mmol/l, and glucose level of 0.99 g/l. In the absence of clinical or biochemical signs of adrenal insufficiency, adrenal function was not further investigated. The newborn underwent a second session of intensive phototherapy, leading to good clinical and biochemical progress. A follow-up abdominal ultrasound scheduled for day 30 of life showed a reduction in the size of the hematoma (**Figure 1**).

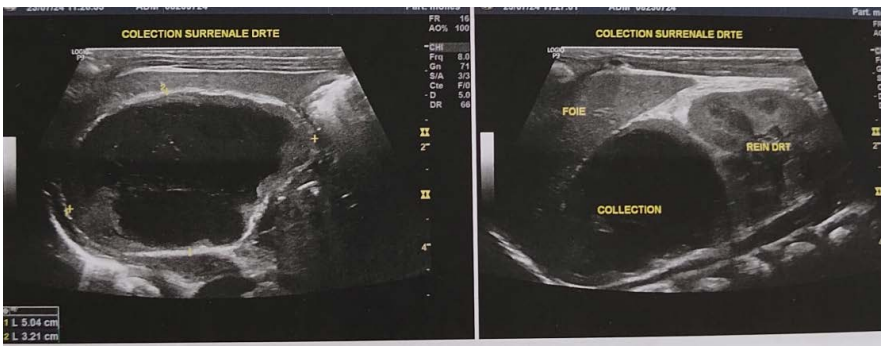

Figure 1. Ultrasound image showing the right adrenal hematoma in our patient.

3. Discussion

Adrenal hematoma is a rare condition [1], with its incidence being difficult to estimate since most patients are asymptomatic [2]. Its prevalence is 1.7 per 1,000 newborns who undergo autopsy [3]. The right adrenal gland is the most common site of hemorrhage (ranging from 38% to 100%) [4] [5], and in 5 to 10% of cases, the involvement is bilateral [6].

Risk factors for adrenal hemorrhage are varied and include: perinatal asphyxia, obstructed delivery, septicemia, coagulation disorders, high birth weight [7]-[10], thrombocytopenia, renal vein thrombosis, trauma during or shortly after delivery [2], necrotizing enterocolitis, and respiratory and circulatory insufficiency [11]. However, in some cases, no identifiable risk factor is present. In the case we

reported, obstructed delivery was the primary risk factor.

Adrenal hematoma can present with an abdominal mass, prolonged jaundice, anemia, or scrotal hematoma [9] [12] [13]. Jaundice results from post-hemorrhagic hemolysis and is characterized by a relatively late onset and prolonged progression. Significant hemorrhage is rare but can lead to hypovolemic shock and severe anemia. Acute adrenal insufficiency is uncommon because the hemorrhage is primarily subcapsular, and hormonal insufficiency does not occur until more than 90% of the adrenal tissue is affected [12] [14].

Ultrasound is the most effective tool for the early detection of adrenal hematoma. Initially, the hematoma appears as a round, hyperechoic structure. Within less than a month, it typically resolves along with necrotic tissue, and peripheral calcification of the gland may form [15] [16]. The diagnosis of adrenal hematoma is generally straightforward when there is a clear clinical context and bilateral lesions. However, it becomes more challenging when the lesion is echogenic, unilateral, and stable over time. In such cases, a differential diagnosis of neonatal neuroblastoma, especially in its cystic form, should be considered [15].

In bilateral cases of adrenal hematoma, it is important to check for biological signs of acute adrenal insufficiency, particularly salt-wasting syndrome, which is often the first sign of peripheral adrenal insufficiency [17]. Confirmation should always be made through hormonal assays [12].

The therapeutic management of adrenal hematoma should be based on the clinical context and predominant symptoms. In cases of severe anemia, a blood transfusion is necessary, and electrolyte imbalances should be corrected. Glucocorticoid deficiency is more common than mineralocorticoid deficiency and should be confirmed through adrenocorticotropic hormone (ACTH) and cortisol assays. Glucocorticoid supplementation is crucial in cases of decompensated adrenal insufficiency, whereas mineralocorticoid supplementation is rarely needed. The child should be monitored for any risk of adrenal insufficiency during periods of stress (such as fever, trauma, or surgery), and hydrocortisone treatment (2 mg/kg/day) should be administered until the adrenal hematoma resolves and hormonal tests normalize [12].

The prognosis for newborns with adrenal hematoma depends on the promptness of diagnosis and treatment [18]. Regular follow-up with ultrasound every two weeks is crucial to monitor changes in the size and echostructure of the lesion. Generally, resolution of the adrenal hematoma occurs between 3 weeks and 6 months [8] [15].

4. Conclusion

Adrenal hematoma is a rare condition that can be potentially life-threatening, making it crucial to investigate when there is a suggestive clinical context. Diagnosis relies on abdominal ultrasound. Although the prognosis is generally favorable, some patients may develop adrenal insufficiency, which may require lifelong replacement therapy.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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