

Burr Cell Hemolytic Anemia with Congenital Varicose Veins: a Distinct Case

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ABSTRACT

Burr cell hemolytic anemia is diagnosed through the identification of burr cells and thrombocytopenia on a peripheral blood smear, in conjunction with an increased reticulocyte count and elevated serum bilirubin levels. Burr cells, referred to as echinocytes, are a type of red blood cell that features short, evenly spaced spicules and a preserved central pallor. This condition is commonly associated with liver disorders or advanced kidney disease. Although the occurrence of burr cell hemolytic anemia in conjunction with varicose veins is rare, it may be indirectly related to liver damage. In this case report, we discuss a patient with congenital varicose veins who experienced tubal abortion and burr cell hemolytic anemia.

Keywords: hemolytic anemia, burr cells, varicose veins, liver dysfunction.

INTRODUCTION

Burr cell hemolytic anemia is identified by the persistent identification of burr poikilocytosis, an increase in reticulocyte production, a decrease in platelet counts and elevated serum unconjugated bilirubin levels. This disorder is often associated with conditions such as alcoholic cirrhosis, cardiac cirrhosis, hemochromatosis, or uremia (1). Progressive liver damage, which leads to al-

terations in plasma and subsequently affects the lipid composition of cell membranes, may cause the abrupt onset of hemolytic anemia. This condition has a direct impact on the erythrocyte membrane and is linked to the presence of circulating burr-shaped cells (2).

Burr cells, or echinocytes, are a type of red blood cell (RBC) distinguished by their short, evenly spaced spicules and a preserved central area of pallor. These cells are commonly found in

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individuals suffering from end-stage renal disease and liver disorders. A schistocyte, on the other hand, is a fragmented red blood cell that signifies intravascular hemolysis or the breakdown of cells (3). Herein we report a case of congenital varicose veins presenting with tubal abortion and burr cell hemolytic anemia. □

CASE REPORT

A 38-year antenatal female patient presented with lower abdominal pain, vomiting and vaginal spotting since two days, following trauma during seventh week of pregnancy. The patient had a history of congenital varicose veins in the right leg (Figure 1).

Ultrasonography (USG) confirmed tubal abortion with tortuous right fallopian tube and right ovarian cyst measuring 2 x 2 cm. There was no portovenous varices on USG. At first presentation, the complete blood counts (CBC) were normal along with all other routine blood investigations. The patient was operated to remove products of conception and right sided salpingectomy was done along with partial right oophorectomy as possibility of ovarian ectopic pregnancy could not be ruled out on USG, which was sent for histopathological examination.

Postoperatively, the hemoglobin (Hb) level dropped from 13.1 g/dL to 8.1 g/dL and platelets mildly decreased from 1,51,000/cumm to 1,20,000/cumm. Total white blood cell (WBC) count was normal with neutrophilia. Peripheral smear showed predominantly normocytic normochromic RBCs, anisopoikilocytosis ++, burr cells + + +, schistocytes (2%), polychromatophils and 2 normoblasts/100 WBCs (Figure 2A). Reticulocyte count was elevated to 8.5% (Figure 2B).

Prothrombin time (PT) was mildly elevated to 15.5 seconds, with mean normal PT of 11.5 seconds and international normalised ratio (INR) of 1.37. Activated partial thromboplastin time (APTT) was reduced to 22.4 seconds with control APTT of 26.4 seconds. Serum bilirubin levels were elevated (total 3.8 mg/dL, direct 1.3 mg/dL, indirect 2.5 mg/dL), with mild reduction in creatinine (0.5 mg/dL), urea (15 mg/dL), albumin (3.4 g/dL) and sodium 134 mEq/L. There was also an elevation of serum alanine aminotransferase (80 U/L) and aspartate transferase (75 U/L). Histopathological examination confirmed tubal products of conception with an ovarian cystic follicle (Figure 3).



FIGURE 1. Varicose veins present in right limb along with hyperpigmented areas

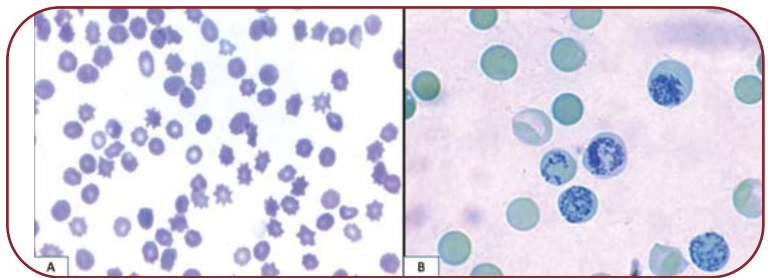


FIGURE 2. A) Peripheral blood smear showing red blood cell anisopoikilocytosis with burr cell hemolytic anemia (Field stain, 1000X magnification); and B) reticulocyte stain showing increased reticulocyte count (New methylene blue stain, 1000X magnification)

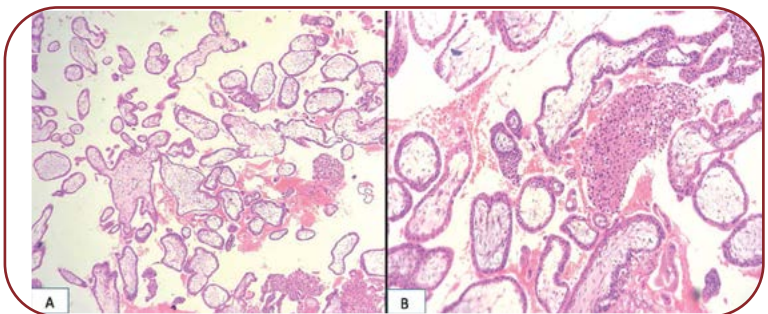


FIGURE 3. Histopathological findings suggestive of tubal products of conception (Haematoxylin and Eosin stain): A) 200X magnification; and B) 400X magnification

Hence, the case was diagnosed to have burr cell hemolytic anemia following tubal abortion. The patient was managed with intravenous ceftriaxone, metronidazole, tranexamic acid along with symptomatic treatment. □

DISCUSSION

Burr cell hemolytic anemia, or echinocytic hemolytic anemia, is identified by the presence of burr cells in the blood, which are RBCs featuring spiky projections. This condition is most often connected to liver diseases, notably alcoholic cirrhosis (1, 2, 4) and kidney disease, especially end-stage renal disease or uremia (3). Conditions such as hypophosphatemia (which involves low phosphate levels), pyruvate kinase deficiency, malnutrition and certain drug-induced anemias can also present with the presence of burr cells (3, 5).

Varicose veins and burr cell hemolytic anemia do not have a direct relationship; however, both may be associated with underlying health problems such as chronic venous insufficiency and liver issues (1, 5, 6). In cases of varicose veins, alterations occur in the internal viscosity and viscoelastic characteristics of RBC membranes. The fluidity of the lipid membrane, along with the structure of the membrane cytoskeleton, results in reduced deformability of RBCs within varicose veins. These identified abnormalities in the RBC membrane carry important pathophysiological consequences, including a greater susceptibility to hemolysis and decreased lifespan of cells in the blood of varicose veins (6).

While varicose veins are not a direct cause of burr cell anemia, they may reflect underlying conditions that could lead to the formation of burr cells. Chronic venous disease can manifest as varicose veins and is sometimes connected to liver disease, which has been associated with burr cell production due to altered lipid metabolism (5). Moreover, the elevated pressure and potential in-

flammation in varicose veins could indirectly impact the health and duration of RBCs, possibly resulting in hemolytic anemia in certain cases (5-8). In our case also, there was congenital varicose veins, which after tubal abortion, presented with burr cell hemolytic anemia, which may be associated with liver dysfunction. ■

CONCLUSION

The case described here highlights a rare presentation of burr cell hemolytic anemia occurring in the postoperative setting of tubal abortion in a patient with congenital varicose veins. The findings underscore the importance of careful hematological evaluation in patients developing unexplained anemia with hemolytic features following surgical or obstetric events. Although a direct causal relationship between varicose veins and burr cell formation remains unestablished, associated alterations in erythrocyte membrane dynamics and possible underlying hepatic dysfunction may contribute to the pathogenesis. Early recognition and appropriate management are essential to prevent complications and ensure favorable clinical outcomes ■

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