

Jaundice and factor VII deficiency in newborn

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ABSTRACT

Jaundice is one of the most frequent referral symptoms to physician in newborn period. Sequestration of blood within body cavities including brain can result increased bilirubin production. But in intracranial hemorrhage (ICH) jaundice is rare or may be delayed after other clinical symptoms. This case is a rare presentation of factor VII deficiency which referred for jaundice secondary to ICH in newborn period.

Case report

In May 25th of 2009 a boy was born with birth weight of 3012grams, birth length of 50cm, birth head circumference (HC) of 34cm. He presented with jaundice and vomiting in day 3 in Kashmar city of Khorasan Razavi province in northeast of Iran. He was treated with phototherapy for jaundice and packed red blood cells (PRBC) for anemia. Total bilirubin was 14.6 grams per dl, hemoglobin 9.3 grams per dl. After 3 days he began to increase head circumference, then was transferred to this university referral hospital for reexploration. On admission in hospital weight was 3150 grams and HC was 39 cm. On 8th day Brain sonography showed dilated third and bilateral ventricle, forth ventricle was normal and communicative hydrocephaly was seen. Axial brain CT scan (figure 1) showed ICH, hydrocephaly and hyperdensity of posterior fossa because of intracerebelar hemorrhage. Magnetic resonance imaging (MRI) showed hydrocephaly and hemorrhage. He was second offspring and born with cesarean section. Apgar score was normal. He received complete vaccination and prophylactic plus VIT K on the first day of life. Mother has history of prolonged bleeding after teeth extraction and father had the history of spontaneous episthaxia. Vital signs of neonate were blood pressure 90 on 60 , temperature 36.8, respiratory rate 40 and pulse rate 140. In neurologic exam except for mild hypotonia everything was normal. The hemoglobin level was 9.3gr.dl , HCT 28% , RBC 2.840000 in Micro liter, white blood cell count 8300.ul , Platelet count 316000 in Micro liter, G6PD normal , Bilirubin

(Total 14.2 mg gram.dl ,direct 0.2) Calcium 8.3, Sugar 163, blood culture negative, CRP negative. Liver and renal function test were within normal range. Coagulation parameters as follow: prothrombin time (PT) 26.3 seconds , activated partial thromboplastin time (aPTT) 38.9 seconds , fibrinogen 404 mg.dl (normal200-400 mg gram.dl), Factor VIII 111 %(normal 50-150%), Factor VII 3.3 %(normal 50-150%), Factor IX 55% (normal 50-150%), Factor II 98% (normal 50-150%), Therapy for neonate was required as frequent fresh frozen plasma (FFP) and packed red blood cell (PRBC) transfusion. He always had prolonged PT with normal PTT for age. The neonate operated for ventriculoperitoneal shunt due to progressive increasing of head circumference. Parents were relative. Assessment family lab test showed, father PT 11.2 seconds and F VII 97%, mother PT 11.8 seconds and F VII 85%, brother PT12.9 seconds and factor VII 73%.

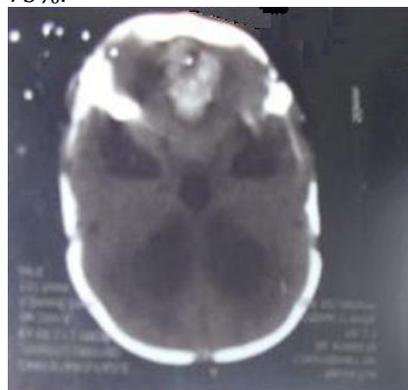


Figure 1. Axial brain CT scan of head at presentation showing an ICH.

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Discussion

Jaundice is observed during the first week of life in approximately 60% of term infants. This case is an unusual presentation of jaundice secondary to a fatal bleeding disorder. Although bleeding must be considered in any newborn with jaundice, ICH is neglected most of the times.

Neonatal bleeding disorders can present diagnostic and therapeutic challenges to the physicians. Early diagnosis of these hemorrhages can avoid significant long- term sequelae.

ICH is the most common reported bleeding complication in newborns with congenital FVII deficiency (1). Approximately 200 cases of true FVII deficiency have been reported. It occurs 1 in 500000 live births making it the less common cause of jaundice and bleeding disorders (1). The condition is inherited as an autosomal recessive trait that produces severe deficiency in homozygote and mild deficiency without clinical manifestation in the heterozygote.

Patients with levels of >10 to 15 IU/dl rarely manifest bleeding (1). Patients with levels between 5 and 10 IU/dl tend to have milder symptoms such as epistaxis, gingival bleeding or genitourinary and gastrointestinal bleeding. Patients with levels <1 IU/dl may have symptoms similar to patients with hemophilia A or hemophilia B, with spontaneous joint and deep-muscle bleeding, but some patients with factor VII levels of < 1 IU/dl have been asymptomatic. Bleeding into the central nervous system is particularly common, being observed in 15 to 60% of patients with factor VII levels <2 IU/dl (1). CNS hemorrhage often presents during the neonatal period and the risk of recurrence is high enough that prophylaxis with factor replacement therapy should be considered in patients who present with this complication (1). In a review of 75 patients with factor VII deficiency, ICH was observed in 12 (16%). In 5 (42%) of these 12 patients, ICH occurred in the first week of life with a fatal outcome (2). Congenital VII F deficiency may occur in infants with Dublin- Johnson syndrome or Gilbert syndrome in special population (3). But in our case decreasing of

hemoglobin is because of ICH. An exceptional co incidence the Dubin Johnson syndrome and congenital deficiency of clotting factors VII appeared in a consanguine Jewish Iranian family in 1999 (3).

The delayed diagnosis of ICH in newborn is due to asymptomatic state of intracranial hemorrhage in some cases (4), indeed hemorrhage occurred in cerebellum. On the other hand it was secondary to delivery in rural and lacking of radiologic diagnostic procedure. The diagnosis of factor VII F deficiency should be suspected in a patient with a history of bleeding when there is an isolated prolonged prothrombin time and normal PTT, but a diagnosis requires specific factor VII F deficiency assay by ELISA for confirmation.

Although jaundice always has a benign cause, it may be secondary to a fatal sequestration of blood such as brain hemorrhage due to coagulation factors deficiency.

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