Treatment of large cutaneous facial hemangioma with propranolol in a child with biliary atresia and esophageal varices

Case Report

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Abstract:

Introduction: Biliary atresia (BA) is the most common cause of neonatal jaundice, for which surgery is indicated. It may lead to portal hypertension and esophageal varices. Sometimes, BA is related to other congenital anomalies and malformation, while a coexistence of BA with facial hemangioma has not been reported, yet. Infantile hemangioma is a childhood benign vascular tumor. Beta blocker has an effect on hemangioma and esophageal varices.

Case Report: A 30-day-old girl with an infantile hemangioma was referred to Amirkola Children's Hospital. According to intraoperative cholangiography and liver biopsy information, BA was diagnosed. Also, she had a large infantile cutaneous hemangioma on her face. Portal hypertension and esophageal varices were diagnosed in her under observation. So, propranolol was prescribed for her. A year after that, her facial hemangioma was gradually getting better.

Conclusions: association of BA with infantile cutaneous hemangioma is rare and cutaneous hemangioma can be treated by propranolol.

Key Words: Biliary Atresia, Infantile Hemangioma, Propranolol, Portal Hypertension

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Introduction:

Biliary atresia (BA) is characterized by a progressive fibro obliterative cholangiopathy of extra or intrahepatic biliary tree. So, bile flow obstruction will be occurring completely or partially [1, 2]. It causes neonatal or infantile persisting conjugated jaundice [2, 3]. BA is idiopathic disease with unknown etiology but some probable etiologies have been suggested such as environmental factors, genetic or immune causes [2, 4, 5]. BA is one of the most common causes of liver transplantation in children. The incidence of BA is ranging from 1:5400 to 1:19000 [2, 6]. The incidence of BA is obviously higher in Asian countries than Western world [3, 7]. The management for biliary atresia is Kasai procedure or liver transplantation. The aim of Kasai procedure is restoring the bile flow. Without these alternatives, BA makes a serious liver disease [2]. BA is usually an isolated malformation, but its association with other anomalies has been reported in 10-25% cases. The most common association is splenic malformations like polysplenia syndrome [2, 8]. Although BA relates to congenital cardiac anomaly, abdominal situs abnormalities and intestinal malrotation [9], there is no evidence of the relationship between BA and cutaneous hemangioma. On the other hand, infantile hemangioma is a common benign vascular neoplastic disorder of diffuse proliferative of capillary endothelium in newborn [10, 11]. The most common area is head and neck [12]. A female to male ratio is 3:1. The infantile hemangioma may be associated

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with some abnormalities based on the area of hemangioma. For example, genital hemangioma correlates with urogenital, anorectal and spinal malformations [13, 14]. Hepatic hemangioendothelioma may be associated with hepatic disease, hypothyroidism, thrombocytopenia and congestive heart failure [15, 16]. The coexistence of orbital cavernous hemangioma with other vascular malformation of the orbit was found [17]. The correlation between ovarian hemangioma and other gynecological neoplasm was also reported [18], whereas there was no association between infantile hemangioma and BA.

BA mostly leads to portal hypertension (HTN) and its complications are varices, ascites and hepatic encephalopathy [19-22]. It can develop biliary cirrhosis [22, 23]. It was found that many patients with BA had esophageal varices and some of them experienced episodes of variceal bleeding [21]. Beta-adrenergic receptor antagonists (beta-blockers) like propranolol and carvedilol have been used for portal HTN for more than 30 years [19, 22, 24]. In addition, since 2008, beta-blocker therapy has been used for infantile hemangioma treatment [10].

This case report for the first time describes the coexistence of BA with infantile extensive cutaneous hemangioma with facial involvement in a girl from infancy. Also, it should be noted that the prescription of the propranolol for esophageal varices has improved her facial hemangioma at the same time.

Case presentation:

A 30-day-old girl was referred to Amirkola children's Hospital due to the jaundice associated with dark (pigmented) urine, acholic stool and icteric sclera. She was born at full term with birth weight of 3.1 kg and normal vaginal delivery. She was born of a non-consanguineous marriage without antenatally detected anomaly on October 6, 2004. The breastfed infant had progressive icterus and large congenital vinaceous hemangioma on her face without ulceration (figure 1). The multiple segmental hemangiomas spread on the right side of her frontal, brow, supraorbital, parietal and front of her right ear were observed upon initial presentation. She had hepatosplenomegaly in the physical examination. There was no neurologic defect or eye abnormality. A full blood work-up was done becuase of her prolonged icterus. On the 30th day of life, her bilirubin was 15.5 mg/dl with a direct bilirubin of 12.1 mg/dl, serum alkaline phosphatase was 920 u/l, aspartate aminotransferase (AST) was 218 u/l and alanine aminotransferase (ALT) was 116 u/l. gamma-glutamyl transferase (GGT) test was 280 u/l. The blood sugar (BS), thyroid -stimulating hormone (TSH), serum electrolytes, prothrombin time (PT) and partial thromboplastin time (PTT) were in normal range. Also, kidney function tests were normal. Torchs (toxoplasmosis, rubella, cytomegalovirus, herpes, HIV and syphilis) workup was done for her and it was negative for all infections. Other screens including sepsis, hepatitis B, hepatitis C, urine culture, and neonatal thyroid screen were negative for evaluating of neonatal cholestasis. No metabolic disorders were found in metabolic evaluation. Brain CT scan, echocardiography and chest X-Ray were normal. The ultrasonography of the pelvis was normal. In the ultrasonography of the abdomen, the hepatosplenomegaly but gallbladder was seen. So, the report was suggestive of BA. HIDA (hepatobiliary iminodiacetic acid) scan showed no clearance of tracer up to 24 hours in the GI-tract (figure 2). According to that information, intraoperative cholangiography and liver biopsy were performed at the same time and their findings showed and proved intrahepatic BA (figure 3). Therefore, at that time (the 41th day of her birth), Kasai operation was done and a week later, prednisolone 1mg/kg/day was prescribed for 2 weeks. Then, the patient has been followed up periodically and she has been taking water soluble and fat soluble vitamins and ursodeoxycholic acid along with breastfeeding.

She has been under our observation till now. In her follow-up, her cardiological examinations and systolic and diastolic blood pressure were normal. When she was 5 years old, she was suffering from upper gastrointestinal bleeding. Her abdominal ultrasonography illustrated the hepatosplenomegaly with dilated splenic vein (12mm) and portal HTN. The upper endoscopy was shown 2 rows of esophageal varices, one row in grade 2 and the other in grade 3. Therefore, sclerotherapy was done and propranolol 1mg/kg/day were prescribed. At that time, she had the large cutaneous hemangioma on her face as before. Around a year later, her facial hemangioma gradually disappeared as shown in figure 4. It was the coincidence that after the prescription of the propranolol for her GI Bleeding, her facial hemangioma has improved. Therefore, it seems that this drug could be effective for the treatment of hemangioma without other interventions. She has been under observation till now and she is waiting for liver transplantation.

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Figure 1: patient presented with large facial hemangioma

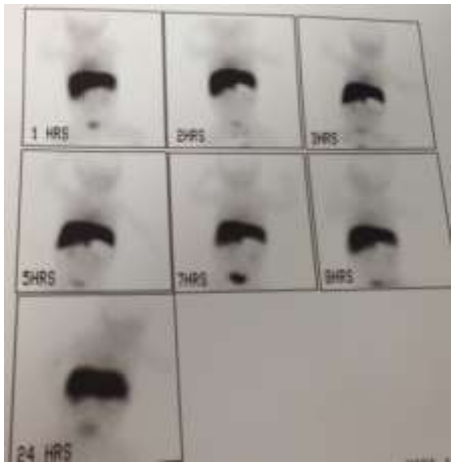

Figure2: HIDA Scan

Figure 3: Intraoperative Colangiography

Figure 4: Dramatic clinical improvement of facial hemangioma after 1 year of taking systemic propranolol.

Discussion:

This case is about the rare association of BA with infantile cutaneous hemangioma. BA is a rare abnormality. In BA, one or more bile ducts are absent or narrow abnormally [2]. Infantile hemangioma is a common childhood benign vascular tumor. The prevalence is 5-10% among neonates and infants [25]. There was no clear association between facial hemangioma and BA in the literature yet, but there was the report on a 4-month-old girl with multifocal hemangioendothelial and multiple cutaneous hemangiomas whose mother had been born with non-syndrome type 3 BA. When the mother was 16 years old, the liver transplantation was done. She had been taking medication with tacrolimus, azathioprine and ursodeoxycholic acid during pregnancy. The paper maintained that the association of girl's hemangiomas and her mother's biliary atresia may be more than coincidental [26]. In 1989, Hendric et al's studied on the infant with multiple cutaneous hemangiomas and cholestatic jaundice and concluded that the extra- or intrahepatic BA cannot be detected through an exploratory laparotomy [27]. There is evidence of the relationship between BA and other anomalies like polysplenia, asplenia, vascular anomalies, situs inverses and cardiac anomalies as BA Splenic Malformation (BASM) syndrome [2]. In rare cases, BA has been associated with jejunal, duodenal and esophageal atresia,intestinal malrotation, annular pancreas, cleft palate, ichthyosis congenital, polycystic kidney and talipes equinovarus [28, 29].

There is evidence of topical and oral beta blocker's effect on every kind of hemangioma safely instead of oral corticosteroids [30-32]. Beta blockers almost always had a good effect on either hemangioma improvement or variceal bleeding prophylaxis and therapy without

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serious side effect [10, 19, 24, 33-36]. Dotan et al's presented that propranolol results even in clinical improvement of hemangiomatosis induced heart failure [37].

This case is under our observation till now. In the patient's follow-up, portal HTN and esophageal varices have been occurred. As we know, portal HTN and esophageal varices are the complications of the patient with BA and bleeding from esophageal varices is life threatening [19]. A beta blocker was prescribed to prevent esophageal variceal bleeding caused by portal HTN. So, another notable point, in this case, is the inhibition of variceal bleeding as well as treatment of her facial hemangioma with 1 mg/kg/day propranolol and without other interventions. It seems that the coincident between BA and facial hemangioma, and therapeutic success report can be helpful future studies. Therefore, we decided to report this case in literature and it can be a topic for future research.

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