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RESEARCH ARTICLE

CASE REPORT: ACUTE HEMOLYTIC CRISIS IN G6PD DEFICIENCY INDUCED BY HENNA

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Abstract

We report 3and halfmonth male infant with acute severe hemolytic episode following henna application as it contain an oxidant ingredient ,2-hydroxy-1, 4naphthoquinone that has similar oxidative properties to naphthalene. With inference to our infant andliterature of many cases report of henna causing acute hemolysis in G6PD to highlight the association of henna and hemolysis in G6PD and discourage it is usage in infant.

Introduction:-

G6PD deficiency, an X-linked disorder, is the most common enzymatic disorder of red blood cells in humans, affecting 200 to 400 million people worldwide [1, 2]. The likelihood of developing hemolysis and the severity of disease are determined by the magnitude of the enzyme deficiency, which in turn is determined by biochemical characteristics of the G6PD variant. The World Health Organization has classified the different G6PD variants according to the magnitude of the enzyme deficiency and the severity of hemolysis [3].Glucose 6-phosphate dehydrogenase (G6PD) deficiency should be considered in the differential diagnosis of any nonimmune hemolytic anemia and in the newborn period with unexplained hyperbilirubinemia. The clinical expression of G6PD variants encompasses a spectrum of hemolytic syndromes. The four forms of symptomatic G6PD deficiency are (acute hemolytic anemia, favism, congenital nonspherocytic hemolytic anemia and neonatal hyperbilirubinemia) [4]. The prevalence of G6PD deficiency in UAE population is 10-14.9% reported by WHO[5].

Henna is a cosmetic dye that is used for dying hand, feet, hair, and nails and also for treatment dermatitis especially in Middle East[6]. There were case reports which identified that henna can induce hemolytic episodes in G6PD[6, 8,9,10]. The literature suggest that Lawsonia is a direct-acting hemolytic agent in henna, which induces an oxidant stress, and are thus consistent with the clinical observation of enhanced susceptibility to henna by G6PD-deficient individuals[7].We report a case of a G6PD enzyme deficient infant with acute hemolysis following exposure to henna.

Methods:-

This was retrospective review the medical records of infant admitted to our hospital and seen by our pediatric team in April 2015. All information was obtained from patient notes and electronic records.

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Case report

3and half month male infant with normal birth and pregnancy apart from mild neonatal jaundice which resolved spontaneously , presented to our hospital with sudden pallor and jaundice of skin and mucous membrane for 2days following application of henna for treatment atopic dermatitis and passing reddish urine color . The condition is not preceded by fever, URTI or drug.His past medicalhistory and family history were unremarkable. On physical examination he had severe pallor, jaundice and active, not dehydrated. His tympanic temperature was36.8, pulse rate188, respiratory rate48, BP91/31mmHg, SPO2=100% CRT less than 2 sec and with normal anthropometric parameters. Heart, chest and CNS examination were normal apart from tachycardia, no hepatosplenomegaly or lymphadenopathy, skin was painted with henna.Laboratory investigations revealed hemoglobin of 4.3g/dL, hematocrit of 13.2%, white blood cell count 17800/mm^3, red blood cell count 1,530,000/mm^3 and platelet count of 411,000/ mm^3. Peripheral blood smear showed 34% neutrophils and 58% lymphocyte , 7%monocytes,reticulocyte count 7.87%.RBCs are normochromic normocytic with few bitten ,blister and polychromatic macrocytes . WBCs are normal in count & morphology. Platelets are adequate in the smear.DAT was negative. G6PD assay was normal initially then it was deficient3.08U/gHb (normal range4.6-13.5) after 6 week from transfusion. Biochemical analysis revealed high indirect bilirubin with normal liver enzymes. After once transfusion of packed red cell and supportive treatment including adequate hydration, the patient was stable and was discharged three days later with good recovery, and in good condition and Hb of 8g/dl.6 week later, patient's clinical re-evaluation was normal with Hb of 11.4g/dl. Parents were educated about the condition and written and verbal handout about the condition and food and drugs that precipitate hemolysis should be avoided.

Discussion:-

Henna is a natural product obtained from the crushed leaves of Lawsonia, has for centuries been used as a cosmetic agent to dye the skin, hair, and nails of people in many Middle Eastern countries and Africa. Application of henna was reported as culprit of acute hemolysis in G6PD[6, 8, 9, 10].Henna contains an oxidant ingredient 2-hydroxy-1, 4-naphthoquinone, which has structural similarity to 2-methyl-1, 4-naphthoquinone (naphthalene) thatis known to induce oxidative injury within red cells. 1, 4-Naphthoquinones are thought to induce oxidative damage as a consequence of their ability to undergo redox cycling with the generation of reactive oxygen species [7].

Hemolysis in G6PD was recognized following ingestion of certain drugs and food like fava bean and certain toxin like naphthalene with many case reports following henna application to infants and children especially in Middle East like UAE[8], Iran[6, 10] and turkey[9].Our infant suffer acute severe hemolytic crisis following application of henna to treated atopic dermatitis as complementary medicine which has popular practice in this area ,one of case report death of newborn due to hemolysis following henna application in UAE[8].

Parameter	13.04.15	14.04.15	15.04.15	10.06.15
Hb	4.3	7.7	8.0	11.4
RBC	1.53	2.2	2.75	4.7
MCV	86.3	84.7	86.9	75.6
Retic	7.87	8.99		0.96
WBC	17.8	17.7	15.9	11
platelet	411	479	479	400

Conclusion:-

Henna can precipitate hemolysis in G6PD in infants and children and in somecase cause grave outcome so the use of henna should be discouraged in infants and children as it is culprit in acute hemolytic episodes in G6PD deficient individual.

Declarations

Competing interests:

None declared.

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Ethical approval:
Obtain from pediatrics department in charge

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