

Case Report

Galactosaemia – The Cause of Gram Negative Neonatal Sepsis

Kishore Kumar R^{1*}, Piyush Shah² and Syed Tejamul¹

¹Consultant Neonatologist & Paediatrician, Cloudnine Hospitals, Bangalore, India

²Consultant Neonatologist, Cloudnine Hospital, Mumbai, India

Abstract

Galactosaemia is caused by deficiency of the enzyme galactose-1-phosphate uridylyltransferase (GALT). Gram negative sepsis, liver failure and death are common if untreated. Early diagnosis especially in babies with Gram negative sepsis - can prevent both morbidity and mortality.

Introduction

Galactosaemia [1], a genetic deficiency of the enzyme *galactose-1-phosphate uridylyltransferase* (GALT), causes accumulation of *galactose*, *galactose-1-phosphate* and *galactitol* in tissues of affected individuals [1]. The primary source of *galactose* is *lactose*, in milk. The clinical signs of this defect (feeding problems, hepatomegaly, jaundice, failure to thrive, cataracts, hypoglycaemia, *gram negative* sepsis and acute liver failure) [1, 2] may become evident during neonatal period and result in death [3].

Galactosaemia can be diagnosed by newborn screening [1]. With restriction on galactose intake -the disease progress can be prevented. India lacks the universal newborn screening program. Thus Paediatricians need to actively seek diagnosis and provide treatment thereafter.

We report 2 cases of galactosaemia presenting with recurrent gram negative septicaemia in early life but were not diagnosed till late.

Key words: Galactosaemia; IEM (Inborn Errors of Metabolism)

Case 1

An ex-preterm male baby born at 28 weeks, with 850 grams birth weight presented to us at a corrected age (CA) 42 weeks with failure to thrive. Weight on admission was 1450 grams, below the 10th centile on Fenton's growth chart. Baby had required intensive care involving ventilation, surfactant administration, total parenteral nutrition, and prolonged antibiotics for *gram negative* septicaemia on 2 occasions, first one due to *E.Coli* and second one due to *Gram Negative Bacilli*, in the neonatal period. He had been discharged on full enteral feeds at CA 36/40 with a discharge weight of 1600 grams. Two weeks later - he was readmitted - when he had abnormal liver function test with deranged enzymes and a *bilirubin* of 15 gms/dL with direct components of 10 mg/dLmg/dl. He had been investigated with HIDA scan for Biliary atresia & congenital infections in the form of TORCH screen. The ultrasonography of abdomen, HIDA scans & TORCH serology were all normal. On this admission, baby presented with failure to thrive and features of sepsis, was started on broad spectrum antibiotics. Initial septic

screen suggested high C-reactive protein 86 mg/dl (N= <6mg/dl) and blood culture grew *Esciheria Coli*. Urine and CSF cultures were sterile. Baby was positive for Galactosemia. Despite all efforts, baby succumbed on 5th day to fulminant sepsis and coagulopathy.

Case 2

A 4^{1/2} month old female child admitted with signs of sepsis and failure to thrive. She was a term baby with a birth weight of 3.1 Kgs and had a normal neonatal course. She was discharged on breast feeds, until she presented to a referring paediatrician for failure to thrive on breast feeds. Initial investigation showed persistent hyper-bilirubinemia of 13 mg/dl with direct *bilirubin* of 9 mg/dl and so was investigated for sepsis, congenital infections, biliary atresia and Tuberculosis. The septic screen was positive for *Escheriacoli*, hence the baby also had lumbar puncture and was discharged later on breast feeds. As part of the investigations, she has had newborn screening by tandem mass spectrometry (TMS), which was positive for Tyrosinemia, later confirmed to be false positive & was suggestive of transient tyrosinaemia. On this admission, baby had septic screen, along with metabolic screen involving serum lactate, ammonia, and liver & renal function tests with test for Galactosemia & Cystic Fibrosis. The septic screen came positive for *Pseudomonas aeruginosa* and high CRP of 186mg/dl. Urine and CSF cultures were sterile. The infant succumbed on day 6th of admission to fulminant sepsis with coagulopathy. Galactosemia screening was positive.

Discussion

In the above two cases, we demonstrate infant deaths for lack of early diagnosis of a treat able disease. Both the babies had recurrent episodes of *gram negative* sepsis with persistent hyper-bilirubinemia,

***Corresponding author:** Kishore Kumar R, Consultant Neonatologist & Paediatrician, Cloudnine Hospital, 1533, 3rd Block Jayanagar, 9th Main, Bangalore - 560011, India, Tel: + 91 80 4020 2222; Fax: + 91 80 4020 2233; E-mail: drkishore@cloudninecare.com

Rec Date: January 8, 2016, **Acc Date:** January 27, 2016, **Pub Date:** January 27, 2016.

Citation: Kishore Kumar R, Piyush Shah and Syed Tejamul (2016) Galactosaemia – The Cause of Gram Negative Neonatal Sepsis. BAOJ Pediat 2: 006.

Copyright: © 2016 Kishore Kumar R, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

and failure to thrive. But the possibility of galactosemia was not thought of nor investigated. In the second case, baby did have a metabolic screening in the form of TMS but not galactosaemia. India does not have newborn screening program, laboratories have to be specifically instructed. Paediatricians request TMS for Inborn Errors of Metabolism (IEM) screen, but TMS does not screen galactosemia [6]. TMS is useful for diagnosing disorders of Amino acid, Organic acid and fatty acid metabolism [6]. Galactosemia is screened using mono-analyte method on chromatography (fluorescent galactose oxidase method) [7], which measures GALT/GPUT enzyme on blood spot collected on filter paper. If screen levels show low transferase activity, prompt confirmation with quantitative study of enzyme are done. Hence unless specifically requested, IEM screen by TMS will not screen for galactosemia.

The above 2 cases illustrate, the low priority in investigating for galactosemia amongst clinicians. Both infants had history of recurrent *gram negative* sepsis with failure to thrive, hyperbilirubinemia– which should prompt one to rule out possibility of galactosemia. We are also presenting these 2 cases, as Galactosaemia is much more common than IEMs + also untreated Galactosaemia can lead to mental retardation or even death, which commonly gets interpreted as due to sepsis as in our cases, had we not screened & diagnosed Galactosaemia. Also on the cost factor, it is much cheaper to screen for Galactosemia than to screen for TORCH or Biliary atresia or IEM screen.

References

1. Berry GT (2012) Galactosemia: when is it a newborn screening emergency? Mol Genet Metab 106(1): 7-11.
2. Karadag N, Zeciroglu A, Eminoglu FT (2013) Literature review and outcome of classic galactosemia diagnosed in the neonatal period. Clin Lab 59(9-10): 1139-1146.
3. Levy HL, Sepe SJ, Shih VE (1977) Sepsis due to Escherichia coli in neonates with galactosemia. N Engl J Med 297: 823-825.
4. Rathi N, Rathi A (2011) Galactosemia presenting as recurrent sepsis. J Trop Pediatr 57(6): 487-489.
5. Porta F, Pagliardini S, pagliardini V, ponzone A, Spada M, et al. (2015) Newborn screening for galactosemia: a 30-year single center experience. World J Pediatr 11(2): 160-164.
6. (2000) American Society of Human Genetics Test and Technology Transfer Committee Working Group. Tandem mass spectrometry in newborn screening. Genetics IN Medicine 2(4): 267-269.
7. Beutler E, Baluda MC (1966) A simple spot screening test for galactosemia. J Lab Clin Med 68: 137-141.