Volume 1 • Issue 5 • 2017

Scientia Ricerca

Letter to the Editor

Current Opinions in Neurological Science

ISSN: 2575-5447

Penicillamine - Neuroprotection against Neonatal Brain Injuries

Lajos Lakatos MD, DSc*, István Pataki MD and György Balla member of the Hung Acad. Sci

Department of Pediatrics, Faculty of Medicine, University of Debrecen, Hungary

***Corresponding Author:** Lajos Lakatos, Department of Pediatrics, Faculty of Medicine, University of Debrecen, 4032 Debrecen, Nagyerdei krt, Hungary.

Received: November 13, 2017; **Published:** November 16, 2017

Volume 1 Issue 5 November 2017

The eminent research article - Luisetto*., et al*. [1] - has encouraged us to write this letter. D-penicillamine (D-PA) was first used for the treatment of neonatal hyperbilirubinemia (NHBI). During this time there was a significantly low incidence of retrolental fibroplasia (RLF - now it is retinopathy of prematurity - ROP) in the infants treated with D-PA. Later, these studies were replicated in other institutes in Hungary, Poland, USA, India and Mexico. It is important to note that there was no intolerance or short- or long-term toxicity of the medication, in spite of the fact that D-PA was used 10-20 times higher doses in the newborn period than those in adult. Furthermore, we have demonstrated a new concept in the etiology of bilirubin-induced neurologic dysfunction (BIND) and highlighted the role of D-PA. Unconjugated bilirubin (UCB) has a special affinity for the basal ganglia. Furthermore, immaturity of the blood-brain barrier also contributes to the development of BIND. Metal ions, especially copper and iron play very important roles in the pathogenesis of neurodegenerative diseases including BIND, having impact on both protein structure (misfolding) and oxidative stress. Our book has addressed the medical necessity of the use of a chelating agent (D-PA) in the treatment of NHBI and in the prevention of ROP [2].

Our recently published case report and other healthy and highly educated patients of the long-term (28-42 years) follow-up suggest that D-PA therapy of newborn infants may have significant neuroprotective effects in cases jeopardized by BIND or retinopathy of prematurity (ROP). In addition, it was our privilage to follow a number of children who are now adults, including sons and daughters of our relatives, colleaques, close friends. They are now highly educated persons working in health care (mostly as physicians), bank, computer and building industry, et cet. Copper dyshomeostasis and oxidative stress have also been concerned in neurodegenerative/neurodevelopmental disorders (NDs) such as autism spectrum disorders (ASD). Our recommandation: all newborns should be screened for ASD, particularly the premature babies and infants suffering from hyperbilirubinemia. These conditions significantly increases the prevalence of NDs, including ASD. Although the 24-hour urine copper test is inconsistent in the neonatal period, and the normal value range may vary among different laboratories, the penicillamine challenge test has proved itself to be useful in the detection of higher copper in the urine [3]. For those children who are voiding copper more than usually in the given institutes or laboratories, high doses D-PA therapy is necessary for 2-3 weeks. Our concept was conceived because of long-term follow up (3-40 years) we found only 1 ASD in the children and adults who were treated with D-PA in their neonatal period (N = 550 patients so far ["New Prevalence Numbers for 2014: 1 in 45 US Children have autism" [4]). This 30 years old male patient was born as a premature infant and had a serious hyperbilirubinemia. He was treated with D-PA without success, because exchange transfusion was necessary to perform.

References

1. Luisetto M., *et al*. "Immune shock chronologic event in some brain pathology". *Current opinions in neurological science* 1.4 (2017): 207-215.
2. Lakatos L and Balla G. "D-Penicillamine in the neonatal period. - Chelation as neuroprotectant in the neonatal period. A book. 2016". *LAMPERT Academic Publishing* ISBN-13: 978-3-659-86459-9.
3. Schilsky ML. "Wilson disease: Diagnostic tests". *UpTodate* Literature review current through Oct (2017).
4. Lakatos L and Balla G. D-Penicillamine in the neonatal period. - Chelation as neuroprotectant in the neonatal period. 2, 3 chapters (pp. 29-49) and 6, 7 chapters (pp.58-79) of book. 2016. LAMPERT Academic Publisching ISBN-13: 978-3-659-86459-9