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Autism: A form of lead and mercury toxicity



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ABSTRACT

Aim: Autism is a developmental disability characterized by severe deficits in social interaction and communication. The definite cause of autism is still unknown. The aim of this study is to find out the relation between exposure to Lead and/or mercury as heavy metals and autistic symptoms, dealing with the heavy metals with chelating agents can improve the autistic symptoms.

Method: Blood and hair samples were obtained from 45 children from Upper Egypt with autism between the ages of 2 and 10 years and 45 children served as controls in the same age range, after taken an informed consent and fill a questionnaire to assess the risk factors. The samples were analyzed blindly for lead and mercury by using atomic absorption and ICP-MS. Data from the two groups were compared, then follow up of the autistic children after treatment with chelating agents were done.

Results: The results obtained showed significant difference among the two groups, there was high level of mercury and lead among those kids with autism. Significant decline in the blood level of lead and mercury with the use of DMSA as a chelating agent. In addition, there was decline in the autistic symptoms with the decrease in the lead and mercury level in blood.

Conclusion: Lead and mercury considered as one of the main causes of autism. Environmental exposure as well as defect in heavy metal metabolism is responsible for the high level of heavy metals. Detoxification by chelating agents had great role in improvement of those kids.

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1. Introduction

Autistic disorder (ASD) is a neurodevelopmental syndrome with onset before the age of 36 months. Diagnostic criteria consist of impairments in sociality and communication plus repetitive and stereotypic behaviors (Bernard et al., 2001; Blaurock-Busch et al., 2011).

The reported prevalence of ASD has increased in recent decades. Information from the Centers for Disease Control and Prevention (CDC) and National Health Interview Survey (NHIS) revealed a nearly fourfold increase in parent-reported ASD

between the 1997–1999 and 2006–2008 surveillance periods. CDC's Autism and Developmental Disabilities Monitoring (ADDM) Network revealed a 78% increase in ASD prevalence between 2002 and 2008 in USA (Boyle et al., 2011; CDC, 2012). Approximately one in 54 boys and one in 252 girls living in the ADDM Network communities were identified as having ASDs. Also, as a comparison of 2008 findings with those for earlier surveillance years revealed an increase in estimated ASD prevalence of 23% when the 2008 data were compared with the data for 2006. These data confirm that the estimated prevalence of ASDs identified in the ADDM network surveillance populations continues to increase. The extent to

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