

Disordered Metal Metabolism in a Large Autism Population

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American Psychiatric Association Annual Meeting

May, 2001 - New Orleans

Abstract

Objective: To investigate the incidence of metal metabolism disorders in an autistic-spectrum patient population.

Method: Chemical analyses of blood and urine samples from 503 patients diagnosed with autistic disorder (n=318), Asperger's disorder (n=23), or atypical autism (n=162) were evaluated.

Results: Of patients tested, 428 (85%) exhibited severely elevated Cu/Zn ratios in blood (average 1.78) compared to a population of healthy controls (average 1.15). Another 30 patients (6%) exhibited a pyrrole disorder associated with severe Zn deficiency. Of the remaining subjects (n=49), 45 reported undergoing aggressive Zn therapy at the time of sampling. A total of 499 of the 503 autism-spectrum patients exhibited evidence of a metal-metabolism disorder.

Conclusion: The absence of Cu and Zn homeostasis and severe Zn deficiency are suggestive of a metallothionein (MT) disorder. MT functions include neuronal development, detoxification of heavy metals, and immune response. Many classic symptoms of autism may be explained by a MT defect in infancy including G.I. tract problems, heightened sensitivity to toxic metals, and abnormal behaviors. These data suggest that an inborn error of MT functioning may be a fundamental cause of autism.

Summary

Recent research indicates that a metallothionein (MT) protein dysfunction may be a primary cause of autism. MT proteins are directly involved in development of brain neurons, detoxification of heavy metals, and immune response. Treatments to promote the induction and proper functioning of MT proteins are described.