CSF β-Endorphin Levels in Patients with Infantile Autism

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We measured CSF levels of β-endorphin, an opioid hormone, in 19 patients with infantile autism and in 3 patients with Rett syndrome, and compared them with control values. In infantile autism, CSF levels of β-endorphin did not differ significantly from those of age-matched controls. There was no significant correlation between CSF levels and clinical symptoms, including self-injurious behavior, pain insensitivity, and stereotyped movement. However, CSF levels of β-endorphin were significantly higher in the patients with Rett syndrome than in the control (p < .05). Data suggest that neurons containing β-endorphin may not be involved in patients with infantile autism. Thus, there is no relationship between dysfunction of brain opioid and autism.

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INTRODUCTION

Several biochemical studies have attempted to clarify the pathogenesis of infantile autism by evaluating plasma or CSF levels of serotonin, monoamines, and opioids (Hanley, Stahl, & Freedman, 1977; Panksepp & Sahley, 1987; Winsberg, Sverd, Castell, Hurwic, & Perel, 1980), but failed to reveal any consistent abnormalities. Some research on neurotransmitters, especially neuropeptides, has focused on autism and other neurologic disorders (Agid & Javoy-Agid, 1985; Matsuishi et al., 1994; Nagamitsu, 1993; Sahley & Panksepp, 1987).

Excessive brain opioid activity is reportedly a possible cause of autism and of such symptoms as self-injurious behavior, pain insensitivity, and stereotyped movement (Gillberg, Terenius, & Lönerholm, 1985; Panksepp & Sahley, 1987; Sahley & Panksepp, 1987). While the administration of naltrexone, an opiate blocker, has been investigated in reducing the self-injurious behavior in autism, its efficacy was confirmed in only a small number of subjects (Black, 1994; Leboyer, Bouvard, & Dugas, 1988; Leboyer et al., 1992).

To clarify whether β-endorphin plays an important role in infantile autism, we determined the cerebrospinal fluid (CSF) levels of β-endorphin, and evaluated the correlation between these levels and autistic symptoms in 19 patients.

METHOD

Patients and Controls

This study was conducted with 19 Japanese children (17 boys, 2 girls, M age 4.23 ± 1.18 years, range 2.00-6.42) with typical infantile autism, who fulfilled the diagnostic criteria of DSM-III-R (American Psychiatric Association, 1987). Some children presented with accessory symptoms such as self-injurious behavior (3/19), pain insensitivity (8/19), and stereotyped movements (10/19). At the inception of study, the parents were asked if their child exhibited such self-injurious behavior as head banging and/or biting oneself, how the child reacted to a painful stimulus, and if the child exhibited such stereotyped movements as hand flapping. Intellectual ability was assessed using Tsumori-Isobe (1965) Childhood Developmental Evaluation Test, which has been standardized and is in wide use in Japan (Tsumori & Isobe, 1965). The developmental quotient (DQ) of the 19 patients ranged from 26 to 84 (57 ± 17). The patients with infantile autism had a DQ below normal levels, while 5 patients (26%) had a near normal DQ ranging from 70 to 85.