

# PEDIATRIC NEUROLOGY BRIEFS

## A MONTHLY JOURNAL REVIEW

J. GORDON MILLICHAP, M.D., F.R.C.P., EDITOR

---

Vol. 16, No. 9

September 2002

---

### AUTISTIC SPECTRUM DISORDERS

#### **BRAIN ANATOMY OF ASPERGER'S SYNDROME**

Brain anatomy and sensorimotor gating were compared in 21 adults with Asperger's syndrome and 24 controls, all of normal IQ, aged 18-49 years. Brain anatomy was studied using quantitative MRI, and sensorimotor 'gating,' or ability to inhibit repetitive thoughts, speech and actions, by measuring prepulse inhibition of startle (PPI). In PPI the startle response to a strong stimulus is muted or inhibited when momentarily preceded by a weak stimulus (the prepulse). The PPI was tested in a subset of 12 patients with Asperger's syndrome and 14 controls. Control but not Asperger subjects had significant age-related reductions in volume of cerebral hemispheres and caudate nuclei. Asperger subjects had significantly less grey matter in fronto-striatal and cerebellar regions, and widespread differences in white matter, compared to controls. Sensorimotor gating was significantly impaired in Asperger's syndrome. The difficulties inhibiting repetitive thoughts, speech and actions, characteristic of subjects with Asperger's syndrome, are associated with anatomical abnormalities in fronto-striatal pathways that result in defective sensorimotor gating. (McAlonan GM, Daly E, Kumari V et al. Brain anatomy and sensorimotor gating in Asperger's syndrome. Brain July 2002;127:1594-1606). (Respond: Dr Declan Murphy, Room M216, Division of Psychological Medicine, Institute of Psychiatry, London SE5 8AF, UK).

COMMENT. Prepulse inhibition of startle response (PPI) is dependent in part on intact fronto-parietal pathways (Bubser and Koch, 1994 and others). The above study demonstrates that subjects with Asperger's syndrome have a significant impairment in sensorimotor gating, or an inability to inhibit repetition of thoughts, speech and actions. This characteristic behavior of Asperger and other autistic patients is associated with reductions in volumes of frontostriatal and cerebellar grey matter and diffuse white matter changes.

#### **EFFECTS OF AGE ON BRAIN DEVELOPMENT IN AUTISM**

Total brain volumes were measured by MRI in 67 non-mentally retarded children with autism and 83 healthy controls, aged 8 to 46 years, in a study at

---

PEDIATRIC NEUROLOGY BRIEFS (ISSN 1043-3155) © 2002 covers selected articles from the world literature and is published monthly. Send subscription requests (\$63 US; \$65 Canada; \$73 airmail outside N America) to **Pediatric Neurology Briefs - J. Gordon Millichap, M.D., F.R.C.P.-Editor**, P.O. Box 11391, Chicago, Illinois, 60611, USA.

The editor is Pediatric Neurologist at Children's Memorial Hospital and Northwestern University Medical School, Chicago, Illinois. PNB is a continuing education service designed to expedite and facilitate review of current scientific information for physicians and other health professionals. Fax: 312-943-0123.