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LANGUAGE DISORDERS

EXPRESSIVE LANGUAGE DELAY RELATED TO CHROMOSOME 7 DEFECT

Genetic analysis in a boy aged 8 years 10 months with severe delay in expressive language and orofacial dyspraxia uncovered reciprocal duplications of the Williams-Beuren syndrome (WBS) locus at chromosome 7q11.23, in a report from the University of Alberta, and other centers in Canada, USA, and Spain. The patient had mental and growth retardation, attention deficit hyperactivity disorder (ADHD), and dysmorphic features, including dolichocephaly, narrow forehead, long eyelashes, broad nose, rotated ears, short philtrum, thin lips, dental malocclusion, high palate, and bilateral simian creases. A Peabody Picture Vocabulary Test score for receptive vocabulary was low average (age equivalent, 6 years 10 months), and in contrast, a standard score on an Expressive Vocabulary Test was in the severe-impairment range (age equivalent, 2 years 3 months). Expressive language delay and speech dyspraxia, which are not characteristic of WBS, appeared to be related to the duplication of the WBS locus and the region on the long arm of chromosome 7 commonly deleted in WBS. The patient had strong abilities in visuospatial construction, and he often resorted to drawing when unable to express his thoughts. This finding was also in contrast to patients with WBS who have weak visuospatial abilities. The authors propose that specific genes at 7q11.23 are sensitive to dosage alterations that influence language development and visuospatial function. (Somerville MJ, Mervis CB, Young EJ et al. Severe expressive-language delay related to duplication of the Williams-Beuren locus. **N Engl J Med** October 20, 2005;353:1694-1701). (Reprints: Dr Osborne, Department of Medicine, University of Toronto, 7238 Medical Sciences Building, 1 King's College Circle, Toronto, ON M5S 1A8, Canada).

COMMENT. This paper describes an expressive language phenotype associated with

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dup7q11.23, located in the long q arm of chromosome 7, at the region commonly deleted in WBS. The characteristic facial phenotype is also shared with a previously described syndrome of delay in expressive language and supernumerary ring chromosome 7. This consists of a high, broad nose, posteriorly rotated ears, high-arched palate, and short philtrum. These facies coupled with expressive language delay should prompt genetic testing for duplication of the WBS region.

An editorial perspective "On genes, speech, and language" (Fisher SE. **N Engl J Med** Oct 20, 2005;353:1655-1657) refers to a specific gene, FOXP2, located in chromosome 7q31, implicated previously in verbal dyspraxia and orofacial dyspraxia (Macdermot KD et al. **Am J Hum Genet** 2005;76:1074-1080; cited by Somerville et al). The above study that identifies a second locus on chromosome 7 associated with language delay and oromotor dyspraxia emphasizes the potential of using molecular diagnostics for early identification of children at increased risk of language and speech impairment.

FOCAL BRAIN LESIONS AND LANGUAGE DEVELOPMENT

The effects of congenital, unilateral, focal brain lesions on development and hemispheric lateralization of language were investigated in 24 preschool children with hemiplegia followed longitudinally at Stella Marios Scientific Institute, Pisa, Italy. Twelve had left hemisphere damage (LHD) and 12 right hemisphere damage (RHD). Linguistic assessment at 2 and 3 years of life showed early left-side specificity for language. As shown by the Fused Dichotic Words Listening Test, a shift of language lateralization to the opposite hemisphere occurred in all 12 children with LHD and in 4 of 12 with RHD. The most atypical lateralization coefficients (values more than 2 standard deviations from the mean of a normal sample) were associated with: 1) delay in lexical and grammatical development, especially after LHD; 2) cortical-subcortical-periventricular lesions more than solely periventricular damage; and 3) larger rather than smaller lesions. A shift of language functions to alternative brain regions, as a result of focal brain damage, is associated with a slow rate of language development. EEG abnormalities alone did not affect language development, but children with seizures were less advanced in expressive grammar and had lower cognitive scores than those with EEG abnormalities but no seizures ($p<0.05$). (Chilosi AM, Pecini C, Cipriani P et al. Atypical language lateralization and early linguistic development in children with focal brain lesions. **Dev Med Child Neurol** November 2005;47:725-730). (Respond: G Cioni MD, Department of Developmental Neuroscience, IRCCS Stella Maris-University of Pisa, Via dei Giacinti 2, 56018 Calambrone, Pisa, Italy).

COMMENT. In children with congenital, focal brain damage and resulting atypical language lateralization, the risk of impaired cognitive and language outcome is increased by large cortical-subcortical lesions of the left hemisphere. The occurrence of seizures accentuates the impairment of language.

Abnormal speech sound representation in persistent developmental stuttering (PDS) is demonstrated in a comparison of mismatch negativity (MMN) potentials elicited in PDS subjects and paired fluent control subjects. (Corbera S et al. **Neurology** October (2 of 2) 2005;65:1246-1252). MMN is a cognitive evoked potential elicited to unexpected auditory stimuli. An abnormal speech sound representation in the auditory cortex may underlie PDS.