NEUROCOGNITIVE EVALUATION OF ADULTS WITH CONGENITAL HEART DISEASE: THE NICHE STUDY

Oral Contributions
Room 146 A
Saturday, March 29, 2014, 8:15 a.m.-8:30 a.m.

Background: Patients with congenital heart disease (CHD) are prone to injury of the developing central nervous system, leading to a higher incidence of neurocognitive and behavioral deficits. This multifactorial brain injury may be antenatal in origin, adversely affected by cardiac surgery with cardiopulmonary bypass, and exacerbated by ongoing cyanosis. Although CHD patients have been shown to have poor medical compliance, lower scholastic aptitude, and difficulty with employment, there are limited data on neurocognitive deficits outcomes in adults with CHD.

Methods: 46 English-speaking study subjects with CHD (mean age = 30.0 y, range18-49 y) who had undergone cardiac surgery before age 5 y were recruited from an outpatient clinic setting. CHD severity was classified as moderate or severe, according to the 32nd Bethesda Conference guidelines. Exclusion criteria included a known diagnosis of stroke, comorbid genetic syndrome, severe psychiatric or neurological conditions, or history of substance abuse. A computerized battery of standardized neurocognitive tests (CNS-Vital Signs; CNS-VS) and validated behavioral rating scales were administered to each patient. Patients completed the testing in clinic under direct supervision.

Results: 21 subjects had moderate CHD (mean age=25.3±6.2 y), 25 had severe CHD (mean age=33.7±7.7y). The severe group did worse on all measures of the CNS-VS, with significant differences in complex attention, cognitive flexibility, and overall executive functioning (all p-values < 0.01). The severe CHD group was more than twice as likely to have moderate impairment with scores below the 10th percentile on the CNS-VS (Odds Ratio 6.4, 95% CI, 1.3-30.8; p<0.05)

Conclusions: Subjects with severe CHD did significantly worse on measures of attention and executive functioning, which is suggestive of involvement of frontal white matter. Although intuitive, severe CHD is often associated with more complex surgical repairs and prolonged cyanosis. Our data would suggest that these risk factors are detrimental to long-term neurocognitive outcomes.