“Does congenital heart disease affect cognitive function? – A pilot study in adults with congenital heart disease”

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Objective
It is often assumed, that adults with congenital heart disease (ACHD) have an impairment regarding their cognitive function. In particular it seems reasonable to assume that cyanosis as well as medical and surgical therapies could have potential impact on cognitive function in adulthood. However, currently there is no data regarding cognitive function formally assessed by intelligence tests in ACHD patients. Therefore, the aim of this study was to analyze the cognitive function and its association with cyanotic conditions in ACHD patients.

Methods
Forty-five ACHD patients (female n=20 (44.4%), mean age at assessment 34.3 ± 13.9 years) underwent the Wechsler Intelligence Scale for adults (fourth edition) – a well-established assessment of cognitive function in adults - as inpatients between March-December 2017. In this test impairment is defined as an intelligence quotient achieved which is below more than one standard deviation of the norm.

Results
The mean overall intelligence quotient (oIQ) achieved by the patients was 94.9 ± 12.9 points. Regarding the subgroups, the patients achieved 97.7 ± 13.1 IQ points (IQp) in verbal comprehension, 94.7 ± 13.0 IQp in working memory, 94.7 ± 14.1 IQp in logical thinking, and 96.7 ± 12.1 IQp in processing performance. Therefore, compared to the norm standard (Ø100 IQp) no impairment of cognitive function was present in the study cohort.

Patients with acyanotic CHD (n=15) achieved a mean oIQ of 95.2 ± 12.1 points, 96.8 ± 12.4 oIQ points in patients with corrected cyanotic CHD (n=24) and a mean oIQ of 86.5 ± 16.1 points in patients who were still cyanotic (n=6). The difference between the groups was statistically not significant (p=0.277).

Conclusions
Contrary to the general assumption, ACHD patients showed no significant impairment in cognitive function compared to the norm. Nevertheless, a trend was shown that cyanotic patients had a lower overall IQ. Further studies in larger cohorts are needed to assess the impact of cyanosis and other possible confounding factors on cognitive function in this growing patient population. The aim would be to identify patients at high risk to allow targeted preventive strategies.