Can neuropsychological testing facilitate differential diagnosis between at-risk mental state (ARMS) for psychosis and adult attention-deficit/hyperactivity disorder (ADHD)?

Studerus E, Corbisiero S, Mazzariello N, Ittig S, Leanza L, Egloff L, Beck K, Heitz U, Andreou C, Stieglitz RD, Riecher-Rössler A.

Abstract

BACKGROUND:
Patients with an at-risk mental state (ARMS) for psychosis and patients with attention-deficit/hyperactivity disorder (ADHD) have many overlapping signs and symptoms and hence can be difficult to differentiate clinically. The aim of this study was to investigate whether the differential diagnosis between ARMS and adult ADHD could be improved by neuropsychological testing.

METHODS:
168 ARMS patients, 123 adult ADHD patients and 109 healthy controls (HC) were recruited via specialized clinics of the University of Basel Psychiatric Hospital. Sustained attention and impulsivity were tested with the Continuous Performance Test, verbal learning and memory with the California Verbal Learning Test, and problem solving abilities with the Tower of Hanoi Task. Group differences in neuropsychological performance were analyzed using generalized linear models. Furthermore, to investigate whether adult ADHD and ARMS can be correctly classified based on the pattern of cognitive deficits, machine learning (i.e. random forests) was applied.

RESULTS:
Compared to HC, both patient groups showed deficits in attention and impulsivity and verbal learning and memory. However, in adult ADHD patients the deficits were comparatively larger. Accordingly, a machine learning model predicted group membership based on the individual neurocognitive performance profile with good accuracy (AUC = 0.82).

CONCLUSIONS:
Our results are in line with current meta-analyses reporting that impairments in the domains of attention and verbal learning are of medium effect size in adult ADHD and of small effect size in ARMS patients and suggest that measures of these domains can be exploited to improve the differential diagnosis between adult ADHD and ARMS patients.