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Diseases of the circulatory system among adult people diagnosed with infantile autism as children: A longitudinal case control study

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ABSTRACT

Background: Research dealing with adult people with autism spectrum disorders (ASD) noticeably lags behind studies of children and young individuals with ASD.
Aims: The objective of this study was to compare the prevalence and types of diseases of the circulatory system in a clinical sample of 118 adult people diagnosed with infantile autism (IA) as children with 336 sex and age matched controls from the general population.
Methods and procedures: All participants were screened through the nationwide Danish National Hospital Register. The average observation time of both groups was 37.2 years, and mean age at follow-up was 49.6 years.
Outcomes and results: Of the 118 people with IA, 11 (9.3%) were registered with at least one disease of the circulatory system against 54 (16.1%) in the comparison group ($p = 0.09$; OR = 0.54; 95% CI 0.3–1.2). Ischemic heart diseases occurred significantly more frequently among people in the comparison group ($p = 0.02$).
Conclusions and implications: It is argued that diseases of the circulatory system may be underdiagnosed in people with IA because of the difficulties they face with respect to identifying and communicating symptoms of ill health. Bearing in mind that cardiovascular disease is the primary cause of death in most developed countries, it is suggested that to prevent disease and manage health conditions, health monitoring is essential in adult people with IA.

What this paper adds?

Large outcome studies of health conditions in adults with autism spectrum disorders are few. In this report we describe, systematically, for the first time, diseases relating to the circulatory system in adults with infantile autism (one subgroup on the autistic spectrum), based on a nationwide hospital register. The significantly lowered likelihood of having any hospital contact during a 37 year long observation period, along with the finding that none of the patients with infantile autism had ever been registered with an ischemic heart disease calls for special considerations with respect to regular health checks.

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1. Introduction

Infantile autism (IA) belongs to a group of complex lifelong neurodevelopmental disorders, which are classified as pervasive developmental disorders (PDD) or autism spectrum disorders (ASD), of which IA forms the main prototype. IA is analogous to childhood autism as defined in ICD-10 (World Health Organization (WHO), 1992) and autistic disorder in DSM-IV-TR (American Psychiatric Association (APA), 2000). ASD is a term that is being increasingly used as an umbrella diagnoses to describe the diagnoses which in ICD-10 and DSM-IV were included under the term of pervasive developmental disorders. In 2013, the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) unified autistic disorder, Asperger's syndrome, childhood disintegrative disorder, and pervasive developmental disorder not otherwise specified into one diagnoses called ASD. (American Psychiatric Association (APA), 2013).

The diagnosis is based on clinical criteria and is characterized by qualitative impairments in reciprocal social interaction, communication and the presence of a restricted repertoire of activities (WHO, 1992). The estimated prevalence of ASD has been increasing during the last decades, and Centers for Disease Control estimates for the prevalence of ASD is now 1 in 68 children which is over 1% of the US population (Baio, 2014). A nearly similar prevalence has been reported for adults alone (Brugha et al., 2011).

The increasing registered rate of people diagnosed with ASD, combined with aging of the population particularly living in developed countries, are converging to create a large and growing number of older people with ASD (Elsabbagh et al., 2012). Indeed, most people living with ASD today are adults and this will continue to be the case. While ASD affects people of all ages, the current research is heavily focused on children (Jang et al., 2014).

IA commonly co-occurs with learning disability (Baird et al., 2006), and medical conditions such as epilepsy (Amiet et al., 2008). In addition, a nationwide Danish register-based study documented a considerable level of contact to somatic hospitals due to a broad array of diseases among children with ASD (Atladottir, Schendel, Lauritsen, Henriksen, & Parner, 2012). ASD traditionally has been seen as a disorder primarily involving atypical development of the brain, but is increasingly being recognized as a disorder not only involving the brain, but the whole body (Treating Autism, 2013). Accordingly, to ensure optimal clinical outcomes, clinicians must be prepared to address both mental and physical health of people with ASD.

Mortality is significantly increased in children and young adults with ASD, with death rates being about two times or more higher than among people of the same age and sex in the general population. Death certificates have identified epileptic, respiratory and cardiac events as common causes of death (Bilder et al., 2013; Gillberg, Billstedt, Sundh, & Gillberg, 2010; Mouridsen, Brønnum-Hansen, Rich, & Isager, 2008; Pickett, Paculdo, Shavelle, & Strauss, 2006; Shavelle, Strauss & Picket, 2001), making detection and treatment of these medical comorbidities of utmost importance. Of note is that Mouridsen et al. (2008) who studied 341 Danish citizens with ASD, on average 43 years of age, reported that diseases of the circulatory system were associated with five of the 14 observed deaths during the 1993–2006 study period. However, due to the small number of cases studied it was not possible to calculate whether individuals with ASD had increased risk for diseases of the circulatory system relative to the general population. Hence, this observation needs cautious interpretation. By contrast, when the authors for the first time studied the mentioned cohort in 1993, they found that diseases of the circulatory system were not associated with any cases of death (Isager, Mouridsen, & Rich, 1999). In that perspective it is important to bear in mind that the prevalence of cardiovascular diseases is markedly related to age, but is low in people aged 35 years and under, and is higher in men than women (Kock, Johnsen, Davidsen, & Juel, 2014).

Currently there are few data regarding the prevalence and types of co-occurring diseases of the circulatory system in people with ASD, as there have been no published studies in the literature specifically dealing with this category of disease. Tyler and colleagues (Tyler, Schramm, Karafa, Tang, & Jain, 2011) used insurance data when they studied chronic disease risk in 108 young adults with ASD (defined by ICD-9 criteria) who had received primary care through the Cleveland Clinic from 2005 to 2008. The average age was 29 years. Compared with a control group of 206 patients from the same health care system matched for age, sex and health insurance status, the authors observed that people with ASD were more likely to be diagnosed with hyperlipidemia (31.5% vs. 18.9%), constipation (22.2% vs. 7.3%), and epilepsy (22.2% vs. 2.9%) and were less likely to be diagnosed with asthma (6.5% vs. 14.1%). There were no significant group differences in the rates of hypertension, diabetes, gastroesophageal reflux disease, osteoarthritis, osteoporosis, congestive heart failure (0.0% vs. 2.4%), coronary heart disease (0.93% vs. 2.4%), or chronic obstructive pulmonary disease (0.93% vs. 0.49%). The authors concluded that without intervention, adults with ASD appear to be at significant risk for developing diabetes, coronary heart disease, and cancer by midlife. In another study from the United States, Croen and colleagues also studied an insured population and used ICD-9 diagnostic criteria when they assessed a variety of medical and psychological health problems in a sample of 1507 adults (>17 years, mean age 29 years) with ASD compared to a control group of 15,070 age and sex matched people from the same insurance database without ASD (Croen et al., 2015). The authors studied medical and psychiatric conditions documented in the database between 2008 and 2012. Nearly all major medical conditions were significantly more common in people with ASD than controls. People with ASD were diagnosed significantly more often than controls with cardiovascular diseases (36.7% vs. 23.0%). For hospitalized cardiovascular diseases the figures were 1.7% and 1.0%, respectively.

Generally, little is known about how aging affects people with ASD, and Piven and Rabins emphasize the need for systematic studies on the characteristics (behavioural, neuropsychiatric, and medical) associated with ASD (Piven and Rabins, 2011). Such knowledge has implications for policy discussions related to the quality of care for people with ASD.

The purpose of the present study was to expand on the above mentioned observations on circulatory conditions among people with ASD. In the following we present the results from a retrospective longitudinal study comparing the prevalence