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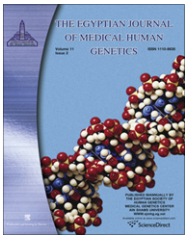

ORIGINAL ARTICLE

Risk factors for autism: An Egyptian study

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Abstract This study has been conducted to determine the possible risk factors of autism. This case control study was conducted at pediatric hospital, Ain Shams University on, 100 autistic patients who were subjected to the followings tools: Confirmation of diagnosis using DSM-IV-TR criteria, IQ assessment using Stanford–Binrent intelligence scale, and assessment of severity of autistic symptoms using childhood autism rating scale (CARS). Full clinical examination, neurological examination, EEG and audiological assessment were also done. Forty-six percent of our patients with autistic symptoms presented at the age of one and half years and 32% at the age of 2 years. Fifty-five percent of our patients had mild to severe retardation (IQ = 20–70), 36% below average mentality (IQ = 71–89) and 9% with normal mentality (IQ = 90–109). High maternal age (mother, $\geqslant$35 years) at birth was found in 23% of autistic children in comparison to 9.5% of controls. Also advanced paternal age (father, $\geqslant$35 years) at birth was found in 91% of cases in comparison to 83.5% of control group and the difference was statistically significant. Positive family history was found to be statistically significantly associated with the risk of autism (16% of cases versus 1% of control). All studied developmental milestones were delayed among autistic children than control group (p = 0.000). As regards natal factors, a history of low birth weight, delivery by cesarian section were significantly higher among cases than controls. Also postnatal factors as history of

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hypoxia, resuscitation and history of jaundice were considered significantly risk factors for autism ($p = 0.000$).

1. Introduction

Autism is defined as severe psychiatric disorder of childhood marked by severe difficulties in communication and forming relationships with other people, in developing language, repetitive, and limited patterns of behaviours and obsessive resistance to small changes in familiar surrounding [1].

Autism is a chronic disorder with an onset before the age of 3 years, characterized by the following three main sets of behavioral disturbances: social abnormalities, language abnormalities and stereotyped repetitive patterns of behaviour [2]. It is considered one of the pervasive developmental disorders which represent a group of clinical syndromes that have two fundamental elements: developmental delays and developmental deviations [3]. The number of reported cases of autism increased dramatically in the 1990s and early 2000s. This increase is largely attributable to changes in diagnostic practices, referral patterns, availability of services, age at diagnosis, and public awareness [4] .Outward appearance of autistic child may not indicate a disorder .Diagnosis typically comes from a complete patient history, physical and neurological evaluation.

The possible causes of autism include perinatal factors as neonatal anemia, high incidence of respiratory distress syndrome and high incidence of medication usage during pregnancy in the mothers of autistic children, also maternal bleeding after the 1st trimester and meconium in the amniotic fluid [5]. It was also found that autism has an important genetic component although how many genes may be involved remain unclear [6].The most frequently described are the structural and numerical abnormalities of sex chromosomes, anomalies of chromosome 15 and chromosome 17q21 [7]. Environmental components are another important aspect of research in ASDs. Environmental factors such as mercury and radiation have been proposed as possible causes of autism spectrum disorders (ASDs) [8]. Several studies provided strong evidence against the hypothesis that MMR vaccination causes autism [9]. Combination of vaccines as MMR and DPT may also overstimulate children immune system that start the autistic biomedical cascade [10]. Prior research suggests that parental characteristics, such as age and level of education, may be associated with a risk of autism. Parental age has been shown to be associated with many disorders, such as schizophrenia, childhood cancer and fetal death, however, results from studies of parental age and autism are inconsistent [11]. Studies focusing on single perinatal risk factor have reported a positive association for low birth weight (<2, 500 g), gestational age at birth of less than 37 weeks, and congenital malformations. A gender stratification in one study indicated an increased risk of autism among boys, but not girls of low birth weight (<2, 500 g) [12]. The causes of autism are still unclear, although results from twin and family studies provide evidence for a strong genetic contribution, with the probability of multiple genetic loci involved. Less than complete concordance in monozygotic twins reveals the necessary role of non-genetic factors in the aetiology of autism [13]. Despite significant research on prenatal, perinatal, neonatal, and other risk factors in autism, the causal nature of these associations is still disputed due to several current methodological limitation of studies [14].

The aim of this work was to describe epidemiological, clinical and psychometric aspects of a group of Egyptian autistic children in order to determine the possible risk factors of autism.

2. Patients and methods

The present study was designed to be a case control type. It enrolled 100 cases with autism diagnosed by DSM-IV-TR criteria (American psychiatric association, 1994 diagnostic and statistical manual of mental disorders, 4th edition criteria, text revised) [15,16]. The patients were 82 males (82%) and 18 females (18%). Their age ranged from 2 to 13 years (mean 6.75, SD ± 3.26 years).They were recruited from the Psychiatric Clinic, Pediatric hospital, Ain Shams University during the period from June 2008 to May 2010. Two hundreds healthy children comprised the control group. They were 144 males (71.3%) and 58 females (28.7%). Their ages ranged from 2 to 11(mean 5.53, SD ± 2.75 years).They were recruited from different outpatient clinics. Two control subjects were matched for each case, in age, gender, environment and habitate. Control group were referred to psychiatric clinic to exclude the presence of ASD.

I All cases were subjected to the following

Detailed history taking with special emphasis on; onset, course and duration of the disease and age, sex of the patient, consanguinity.

- Antenatal or maternal history: age at patient's birth, history of threatened abortion, any fetal loss, parity, chronic illness as hypertension, Diabetes mellitus (DM), infections or hospitalizations during pregnancy, medications (e.g.: antiepileptic drugs, anti-thyroid drugs, anti-D injection …..).
- Natal and postnatal history including, gestational age, complication during Labour or delivery, history of prematurity or intrauterine growth retardation, gestational age at birth, birth weight, perinatal problems and postnatal course especially occurrence of neonatal hypoxia, resuscitation, pallor and jaundice.
- Developmental history (both mental and motor): age of sitting up without support, walking unassisted, first spoken word, combining words, accurate details of cognitive abilities, gross and fine motor functions, feeding disorders, abnormal sleep patterns and history of vaccination.
- Past history including: major childhood illnesses, any previous therapies used to treat the child's condition.
- Family history for any similar conditions, any genetic diseases and other psychological or mental disorders in the family.

Through clinical examination with laying stress on neurological examination.