



POSTNATAL RISK FACTORS IN PATIENTS WITH AUTISM SPECTRUM IN AL-NAJAF CITY

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Article Received on 21/06/2019

Article Revised on 11/07/2019

Article Accepted on 01/08/2019

ABSTRACT

Recently, autism spectrum disorder (ASD) has been considered as an increasing problem specially in Iraq. This study was designed to investigate the assessment of postnatal risk factors of ASD in Al-Najaf Province. The purpose of this study was to determine the main demographic and clinical postnatal risk factors of ASD among involved children and to find out the relationship between clinical risk factor and demographic factors. A cross-sectional descriptive approach was designed to meet the previously mentioned objectives of the current study. The period of the study is from Dec. 2018 to March. 2019. A Convenience sample of (40) children with autism spectrum was taken in this study. That the highest percentage of the women's subgroup are : women with ages between (6-8) years old which constitute (47.5%), male patients (85%), those who live urban residents (87.5%), those who most of their fathers are employee (62.5%), those who most of their mothers are housewives (65%). The present study also revealed that the major clinical risk factors for autism are: patients with low birth weight (65%), jaundice (47.5%), respiratory infection (20%), allergy (12.5%), chronic disease (27.5%), auditory disease (7.5%), blood disease (7.5%) and second hand smoking (2.5%). It was concluded that the most contributing risk factors in the occurrence of ASD are: low birth weight, jaundice, chronic diseases and respiratory infection.

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 pattern of behaviors and obsessive resistance to small changes in familiar surrounding (El-Baz et al., 2011).

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 pattern of behavior. 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 deviation. 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 pattern, availability of services, age at diagnosis, and public awareness (Kidd, 2002).

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. It was also found that autism has an important genetic component although how many genes may be involved remain unclear. The most frequently described are the structural and numerical abnormalities of sex chromosomes, anomalies of chromosome 15 and chromosome 17q21 (Arndt et al., 2005).

Environmental components are another important aspect of research in ASDs. 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. 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 malformation. A gender stratification in one study indicated an increased risk of autism among boys, but not girls of low birth weight (<2, 500 g). Less than complete concordance in monozygotic twins reveals the necessary role of non-genetic factors in the etiology of autism (El-Baz et al., 2011).

Autism spectrum disorders (ASDs) are prevalent neurodevelopmental disorders. ASDs diagnoses are characterized by impairment in social interaction and communication, repetitive behaviors, abnormal movement patter, and seory dysfunction. A kid who has autism has trouble in linking words to their meaning, doesn't like changes in routines, and acts in unusual ways. There is increasing suspicion that autism doesn't have a single cause but it is a complex disorder with a triad of (social impairment, repetitive behavior, communication difficulties) that have distinct causes (Gockley et al., 2011).

METHODS

1. Design of the study

A cross-sectional descriptive approach was designed to meet the previously mentioned objectives of the current study. The period of the study is from Dec. 2018 to March. 2019. A Convenience sample of (40) children with autism spectrum was taken in this study.

2. The study itrument

The researchers have adopted the following tool to assess postnatal risk factors in patients with autism spectrum in Al-Najaf city.

The final copy coists of the following parts:

1-Patient's socio-demographic data form.

2-Patient's clinical data form.

3. Statistical Analysis

The following statistical approaches are used in order to analyze the data of the study under application of the statistical package Mega stat (2005): two tailed Chi square-test was used test association between qualitative variables.

3. RESULTS

Table (3.1) shows statistical distribution of study sample (patients) by their socio-demographic data, it explai that the highest percentage of the women's subgroup are : women with ages between (6-8) years old which cotitute (47.5%), male patients (85%), those who live urban residents (87.5%), those who most of their fathers are employee (62.5%), those who most of their mothers are housewives (65%).

Table (3.1): Statistical distribution of study group (patients) by their Socio-Demographic Data.

| Items | Sub-groups | Patients group Total = 40 | |
|--------------|------------|------------------------------|------------|
| | | Frequency | Percentage |
| Age / Years | 3-5 | 3 | 7.5 |
| | 6-8 | 19 | 47.5 |
| | 9-11 | 18 | 45.0 |
| Gender | Male | 34 | 85.0 |
| | Female | 6 | 15.0 |
| Residency | Urban | 35 | 87.5 |
| | Rural | 5 | 12.5 |
| Father's Job | Employee | 25 | 62.5 |
| | Free Job | 15 | 37.5 |
| Mother's Job | House wife | 26 | 65.0 |
| | Employee | 14 | 35.0 |

Table (3.2): Statistical distribution of patients group by their Clinical Data.

| Items | Sub-groups | Patients group Total = 40 | |
|-----------------------|-------------|------------------------------|------------|
| | | Frequency | Percentage |
| Birth Weight | Underweight | 26 | 65.0 |
| | Normal | 14 | 35.0 |
| Respiratory infection | Yes | 8 | 20.0 |
| | No | 32 | 80.0 |
| Jaundice | Yes | 19 | 47.5 |
| | No | 21 | 52.5 |
| Allergy | Yes | 5 | 12.5 |
| | No | 35 | 87.5 |
| Chronic Disease | Yes | 11 | 27.5 |
| | No | 29 | 72.5 |
| Drug Taking | Yes | 52.5 | 21 |

| | | | |
|---------------------|-----|------|------|
| | No | 47.5 | 19 |
| Auditory Disease | Yes | 3 | 7.5 |
| | No | 37 | 92.5 |
| Blood disease | Yes | 3 | 7.5 |
| | No | 37 | 92.5 |
| Second Hand Smoking | Yes | 1 | 2.5 |
| | No | 39 | 97.5 |

According to table (3.2), the statistical distribution of study sample (patients) by their clinical data explain the following risk factors: the major clinical risk factors for autism are: patients with low birth weight (65%), jaundice (47.5%), respiratory infection (20%), allergy (12.5%), chronic disease (27.5%), auditory disease (7.5%), blood disease (7.5%) and second hand smoking (2.5%).

Table (3.3) shows that there is no significant association between clinical risk factors of patients with autism and their demographic data, so that it refers to that there is no confounding factor that may interfere with the risk factors.

Table (3.3): Relationship between clinical risk factors of patients with autism and their demographic data.

| Demographic Data Clinical Data | Age | Gender | Residence | Father's Job | Mother's Job |
|-----------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Chi Square (P value) | | | | |
| Birth Weight | $\chi^2= 1.76$ = 0.18 | $\chi^2= 1.76$ = 0.16 | $\chi^2= 1.24$ = 0.23 | $\chi^2= 1.86$ = 0.12 | $\chi^2= 0.77$ = 0.32 |
| Respiratory infection | $\chi^2= 1.86$ = 0.14 | $\chi^2= 1.26$ = 0.15 | $\chi^2= 1.66$ = 0.26 | $\chi^2= 1.32$ = 0.46 | $\chi^2= 1.55$ = 0.26 |
| Jaundice | $\chi^2= 1.34$ = 0.26 | $\chi^2= 1.42$ = 0.13 | $\chi^2= 1.54$ = 0.36 | $\chi^2= 1.35$ = 0.26 | $\chi^2= 1.66$ = 0.26 |
| Allergy | $\chi^2= 1.71$ = 0.16 | $\chi^2= 1.76$ = 0.15 | $\chi^2= 1.55$ = 0.12 | $\chi^2= 1.44$ = 0.35 | $\chi^2= 1.34$ = 0.25 |
| Chronic Disease | $\chi^2= 2.76$ = 0.06 | $\chi^2= 1.22$ = 0.18 | $\chi^2= 1.52$ = 0.14 | $\chi^2= 1.65$ = 0.17 | $\chi^2= 1.85$ = 0.35 |
| Auditory Disease | $\chi^2= 1.55$ = 0.46 | $\chi^2= 1.22$ = 0.36 | $\chi^2= 1.42$ = 0.36 | $\chi^2= 1.65$ = 0.26 | $\chi^2= 1.85$ = 0.13 |
| Blood disease | $\chi^2= 1.76$ = 0.16 | $\chi^2= 1.3$ = 0.2 | $\chi^2= 1.6$ = 0.26 | $\chi^2= 0.96$ = 0.46 | $\chi^2= 0.76$ = 0.56 |
| Negative Smoking | $\chi^2= 1.22$ = 0.16 | $\chi^2= 1.73$ = 0.16 | $\chi^2= 1.56$ = 0.16 | $\chi^2= 1.66$ = 0.16 | $\chi^2= 2.76$ = 0.16 |

DISCUSSION

According to table (3.1), the highest percentage age group is between (6-8) years, it makes about (47.5%) at the study sample, this may be attributed to delay in seeking medical care (help) by the family because of neglect or not observing the signs of autism.

The same table (3.1) shows that the majority of children with autism are male, this result agrees with previous studies that recorded high prevalence of autism among males. A ratio of 4: 1 male to female sex bias has constantly been observed in autism spectrum disorder (ASD). Sex and gender provide unique angles for understanding causal mechanisms in atypical human developmental conditions and should be a central theme in the understanding of autism and its vast heterogeneity. Note that the term sex refers to the biological and physiological characteristics that define men and women, and 'gender' refers to the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for men. It was also found that

females with autism tend to be identified later than males; this result can be explained by the genetic differences between male & female that lead to differences in anatomy and physiology (Lai et al. 2015).

Researches also mentioned that white matter brain tissue in female is more efficient in communication than male; Nordahl et al. (2015) extended this by showing that there are sex/gender differences in the pattern of altered corpus callosum neuroanatomy in a longitudinal sample of preschoolers with autism. They found male and female with autism, early in life in autism, possibly reflecting the key role of early biological factors giving rise to sex-differential etiological mechanisms, such as prenatal steroids and associated regulatory mechanisms or early neuro-inflammatory mechanisms. Epidemiology and genetic studies suggest a female protective effect (FPE) may account for part of this bias; however, the mechanism of such protection is unknown. Quantitative assessment of ASD symptoms using the Social Responsiveness Scale (SRS) shows a bimodal distribution unique to females in multiplex families. This

leads to the hypothesis locus on chromosome X might mediate the FPE and produce the ASD sex bias. such a locus would represent a major therapeutic target and is likely to have been missed by conventional genome-wide association study (GWAS) analysis (Gockley et al., 2015).

For instance, increased inherited mutation occurring in previous generation and 'carried' by unaffected/undiagnosed females in the family that ubiquitous females-protective mechanism. For predication 2 to be observed, ubiquitous female-protective effects have to be overwhelmed by additional risk mechanisms. Elucidating the different mechanisms/factors contributing to FPE should be a focus of etiological investigation (Lai et al., 2015).

The current study showed that about (87.5%) at children are living in urban residence. This result can be explained by differences in life style between rural and urban areas most parents in urban are employee or have works outside their houses, so that their children may be left alone or with communication and emotional status that lead to development of autism some autism found an association between ASD and urbanicity (i.e. higher risk of autism in urban versus rural districts) has been documented (Lai et al., 2012).

According to table (3.2), the majority of patients with autism are classified as low birth weight (65%). this result agrees with the study conducted by Lampi et al. (2012) who recorded that low birth weight and small gestational age, this may be explained by the effect of low birth weight on brain growth. 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 malformation. A gender stratification in one study indicated an increased risk of autism among boys, but not girls of low birth weight (<2, 500 g). Premature infants with very low birth weight often need long hospitalization in the neonatal intensive care unit (NICU). Is also possible that the environment of the NICU adversely affecting emotional and social maturation may result in negative effects on child neurodevelopment. Another possibility is that prematurity ASD may share similar neurodevelopmental antecedents, including exposure to adverse prenatal factors. (Lampi et al., 2012).

The same table reveals that about (47.5%) of patient with autism had underwent from of jaundice. this come in agreement with the work of Lozada et al. (2015) who revealed that children with ASD have a high percentage of diagnosis with jaundice during the neonatal period, this can be interpreted by the neurotoxicity of high bilirubin during neonatal period. That hyperbilirubinemia in the neonatal period is an important Their findings suggest factor to consider when studying causes of infantile autism. 55% of our patients presented with mild to severe mental retardation, 36% with below average

mentality. EL-Baz et al. (2011) found that children who develop ASD are more likely to have an admission with a diagnosis jaundice in the neonatal period and more likely to require treatment for this jaundice. Children who develop ASD are more likely to have an admission with a diagnosis jaundice in the neonatal period and more likely to require treatment for this jaundice. Conclusion, our study provides further evidence that neonatal unconjugated hyperbilirubinemia associated with the development of ASD. The estimates are consistent with prior literature and there is biologic plausibility. Further prospective studies are needed to clarify specific serum levels of bilirubin in combination with other neonatal risk factors that mediate the association of jaundice and ASD (Lozada et al., 2015). Regarding Allergy, only small percentage patient with ASD (12.5%) have allergic disorders. This can be supported by the study made by Hori et al. (2017) who found that about (14.7%) of ASD patient have asthmatic and allergic disorder. Concerning smoking, (second hand) smoking SHS., only (2.5%) of ASD patient have second hand smoking have smoking. This percentage is very close to that obtained by khalil et al (2018) who recorded by (2%) of patient with ASD had SHS exposure.

CONCLUSION

It was concluded that the most contributing risk factors in the occurrence of ASD are : low birth weight, jaundice, chronic diseases and respiratory infection.

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