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Study of Possible Association between ABO Blood Groups and Autism Spectrum Disorder

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Abstract **Original Research Article**

Autism spectrum disorder (ASD) is one of the most worldwide neurodevelopmental disorders is characterized by the core domains of persistent deficits in social communication and restricted-repetitive patterns of behaviors, interests, or activities and language delay. Pro-inflammatory events and immune system dysfunctions are cellular and molecular events associated with ASD. Several conditions co-occur with ASD: seizures, gastro-intestinal problems, attention deficit, anxiety and depression, and sleep problems. The occurrence of ASD has been increasing worldwide, with the most recent prevalence studies indicating that they are present in 6 per 1000 children. Although the cause of these disorders is not yet known, studies strongly suggest many risk factors have been identified that may contribute to the development of ASDs. These risk factors include genetics, environmental factors, prenatal and perinatal factors, and neuroanatomical abnormalities a genetic basis with a complex mode of inheritance. More research is needed to explore factors that could be contributing to the cause of these disorders. Continued evaluation of genetic factors in combination with these different factors, is critically needed to take this Genetic progress even further in our understanding of, and ability to have a positive impact on, ASD. Inherited factors contribute to ASD etiology, remains incompletely understood. The objectives of this article are to investigate the main cause of ASD provide physicians with relevant information needed to eliminate the incidence of ASD and to eliminate the etiology and management of these disorders. It seemed reasonable to surmise that ABO blood type was functionally related to ASDs. Blood types are inherited from both parents. We hypothesized that if parental ABO blood type were associated with the development of filial ASDs, there would be a higher probability of filial ASDs in parents with a specific ABO blood type. If so, medical workers can utilize the parental ABO blood type as an easy way to roughly predict the morbidity of ASDs. Aim of this study: To determine whether there is a specific ABO blood type responsible in Autistic child. Methods: we surveyed families of children with ASD ascertained through different Libyan Health Center in different area in Libya. Sample: Study Population, with a total number of 220 parents self-filling questionnaire by autistic parent's child. From 2018 to 2019. We surveyed families of autistic child and made laboratory blood group investigation to detect which specific blood group more frequent in parents ASD. This study particularly focuses on data obtained by investigators in the different region. This might ultimately help to improve the assessment and treatment of ASD on the Libyan population and worldwide in general. To determine whether there is a specific ABO blood type in parents of children with ASD. Study design*:* descriptive-analytical study-Cross sectional study. Results*:* There was a no significant relationship between mother's blood group Rh blood and having autistic child for both gender (*p.value* =0.262). And no significant relationship between having autistic children and the following variables was found: child birth weight (*p. value* =0.829), shortage of oxygen during delivery (p. value 0.822), normal, caesarian delivery (*p.value*= 0.416), jaundice child (*p. value* =0.742), and Imyonoglubulin (*p.value* =0.120).There was a no significant relationship between father's Rh blood and having autistic child (*p.value*= 0.354). And no significant relationship between having autistic children and the following variables was found: child birth weight (*p.value* =0.878), shortage of oxygen during delivery (p. value 0.649), jaundice child (*p.value* =0.353), and Imyonoglubulin (*p.value* =0.120). Conclusion*:* There is no relation between fathers and mothers (negative Rh blood and with positive Rh blood) and increased the likelihood of being child with autism. Furthermore, we studied many different variable that may contributes in autism, such as child birth weight, type of delivery, jaundice, shortage of oxygen on baby during delivery, our study adds to the evidence that there is causal association between parent's blood type O and outcome of autistic child, and has major implications for other hematic and genetic research to investigate why blood

group O parents have more risk for autism child outcome. Recommendation*:* From our finding, we will study the rationale behind the blood group O responsibility in Autism appearance.
Keywords: Autism spectrum disorder, neurodevelopmental disorders; genetics; ABO blood type.

INTRODUCTION

Autism spectrum disorder (ASD) is a neurodevelopmental disorder defined by persistent deficits in social communication and social interaction, accompanied by restricted, repetitive patterns of behavior, interests, or activities.(Gepner and Feron, 2009; Lai *et al*., 2014; Levy *et al*., 2009; Weintraub, 2011).

The signs of ASD are usually evident in early childhood. However, it is still considered a lifelong diagnosis, with appropriate early intervention; individuals with ASD can lead productive, inclusive, and fulfilling lives. Many children with ASD do well in school, participate in activities they enjoy, go on to college, and are employed in adulthood. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association (2013), a guide created by the American Psychiatric Association used to diagnose mental disorders, people with ASD have:

- Difficulty with communication and interaction with other people
- Restricted interests and repetitive behaviors
- Symptoms that affect the person's ability to function in school, work, and other areas of life.

Autism is known as a "spectrum" disorder because there is wide variation in the type and severity of symptoms people experience.

ASD occurs in all ethnic, racial, and economic groups. Although ASD can be a lifelong disorder, treatments and services can improve a person's symptoms and ability to function. The American Academy of Pediatrics recommends that all children be screened for autism. All caregivers should talk to their child's doctor about ASD screening or evaluation.

Autism was first used by Kanner in 1943. Over the years, the diagnosis has been extended to include multiple types of autism. **(**Almandil *et al.*, 2019) During the last years studies described autistic diagnosed children to different three subtypes according to their severity and children clinical condition, Asperger's disorder, autistic disorder, childhood disintegrative disorder, childhood autism, and pervasive developmental disorder not otherwise specified. Study by Baxter et al., in 2015 and Christensen et al., in 2016 recently estimated the (ASD) ~1.5% in developed countries around the world. In The last decade, many researchers worked to exclude the etiologies underlying ASD, but remain largely unexplained. Recently progress has been made to identifying some neurobiological and genetic underpinnings of, and risk factors for, this complex condition. ASD is highly heritable, but environmental factors are also implicated in ASD. Multiple lines of evidence suggest the etiology of ASD has prenatal origins. Although specific causes of ASDs have yet to be found. (Szatmari P., 2003) Many risk factors have been identified that may contribute to the development of ASDs. These risk factors include genetics, environmental factors, prenatal and perinatal factors, and neuroanatomical abnormalities. The results of twin studies suggest a dramatically higher concordance rate in monozygotic twins than in dizygotic twins. The ABO blood type is controlled by the ABO gene encoding aglycosyl transferase, an enzyme that modifies the carbohydrate content of the red blood cell antigens. The gene is located on chromosome and consists of seven exons, 9q34. A series of single nucleotide polymorphisms across the seven exons form three different alleles of the ABO gene, referring to the A, B and O alleles. As the ABO gene is located on the ninth chromosome, of which structural variation is also observed in some individuals with ASD it seemed reasonable to surmise that ABO blood type was functionally related to ASDs. Blood types are inherited from both parents. We hypothesized that if parental ABO blood type were associated with the development of filial ASDs, there would be a higher probability of filial ASDs in parents with a specific ABO blood type. If so, medical workers can utilize the parental ABO blood type asan easy way to roughly predict the morbidity of filial ASDs.

2-Diagnosis

Therapeutic advancements Current screening tools include the infant toddler checklist (ITC), which is used in the screening of children ages 9 months to 2 years, and the modified checklist for autism in toddlers—revised (M-CHAT-R), intended for children between 16 and 30 months. Many clinical conditions Such as intellectual disability, gastrointestinal disorders, attention and immune deficits, epilepsy, sensory sensitivities, depression, and anxiety are known to be associated with ASD. EEG and neuroimaging play a major role in the diagnosis and in the selection and follow-up of therapeutic responses. Psychotropic and antiepileptic drugs are currently available as effective pharmacological treatments. Even though numerous genetic studies have identified various diagnosis is based on the DSM-5 criteria. No objective diagnostic tests are available. EEG and neuroimaging play a major role in the diagnosis and in the selection and follow-up of therapeutic responses. Psychotropic and antiepileptic drugs are currently available as effective

pharmacological treatments. Even though numerous genetic studies have identified various ASD-associated genes and functional convergence, researchers still cannot determine the ASD-causing genes and their impacts on the development of ASD. Further international networking and multidimensional studies are needed to reveal the facts in order to design effective treatment strategies (Almandil *et al.*, 2019).

3. Impact on Families

The lives of family members of diagnosis autistic child encounter difficulties, and everyday activities will change, since the child needs extra attention from his or her parents. In 2010 study by Banach *et al*., estimated that, family that their child was diagnosed as autistic,52% felt relieved, 43% of parents felt grief and loss, 29% felt shock, , and 10% felt self-blame. Upon the initial diagnosis of their child's behavior, adaptation to a new lifestyle, and complexity in finding access to services, parents mostly suffered from stress. Studies have pointed out that the stress affects the parent's marital relationship, increase their financial burden, and lead to isolation from others. Because the mothers are the children's primary caregiver, they suffer from stress more than father does. The autistic child unable to express his/her basic demands which, lead to stressful issue for parents. This result aggressive attitude by the autistic child, as the parents will not be able to know if their child is sick, hungry, tired, sad, or mad, especially if the child is nonverbal. Some people and relative may not understand the child behavior and special situation. This gives parents a feeling of isolation from family, friends, and the community (Autism Society, 2011). The financial aspect is considered to be an important issue. Autistic children need special services to assist in their care, which causes financial stress for the parents. Moreover, if one of the parents decides to quit his/her job to help take care of the autistic child; this will obviously lead to financial stress, since the other parent will be responsible for supporting the entire family. In addition to parents, siblings are also impacted when an autistic child is diagnosed. Siblings may feel embarrassed around peers. They may also feel jealous, since their parents may need to spend more time with the autistic brother/sister. They may also feel frustrated over not being able to understand their autistic brother/sister (Hartmann A., 2012; Almandil *et al.*, 2019).

4-Epidemiology

Epidemiology is the discipline that is concerned with patterns of disease occurrence in human populations and by the factors that influence them. Typical study designs are the prospective cohort study and the case–control study de-pending upon whether subjects are ascertained according to their exposure or disease status (Fombonne E., 1999). Considerable progress in understanding the epidemiology of ASD has been made over the past decade. The ASD prevalence has been increasing worldwide due to the broadening of diagnostic criteria and wider public awareness of the disorder. The prevalence of autism is variable; the US reported a median of 21.6 per 10,000, Europe reported a median of 18.75 per 10,000, and China reported a lower median of 11.6 per 10,000 [19]. The prevalence of ASD ranges from about 25 to 110/10,000 children [20, 21]. The incidence rate of ASD in family members of a child with autism is 2–8% higher than in the general population. The US Centers for Disease Control and Prevention (CDC) estimates that ASD occurs in one of every 59 children in the US aged eight years old. Although other using data from the National Health Interview Survey study in 2015 by Zablotsky *et al*., excluded when including children 3–17 years of age, where they found one child affected out of every 40 children in the US for the years 2014–2016. Moreover, it is reported that ASD occurs more frequently in males than females. Prevalence studies were conducted in the UAE, Saudi Arabia, Oman, and Bahrain The prevalence of ASD was 1.4 per 10,000 in Oman, 29 per 10,000 for PDD (pervasive developmental disorder) in the UAE, and 4.3 per 10,000 in Bahrain Most recently, a study conducted in 2013 in Taif (Saudi Arabia) reported that the prevalence of ASD in males (0.031%) was greater than in females (0.004%) (Meguid NA *et al.*, 2015).

5-Etiology

Autism spectrum disorder (ASD) is a complex neurodevelopmental condition with lifelong impacts. The causes of autism are still poorly understood. Etiological theories have changed throughout the years. Until the 1970s, faulty child rearing was thought to be the cause, but this theory has been rejected. Currently, ASD is considered a multifactorial disorder caused by genetic, epigenetic, and environmental factors. Genetic and environmental factors contribute to ASD etiology, which remains incompletely understood. Genetic studies have identified a number of rare de novo mutations, and gained footing in the areas of polygenic risk, epigenetics, polygenic risk, and gene x environment (GxE) interaction. Epidemiologic investigations focused on non-genetic factors have established advanced parental age and preterm birth as ASD risk factors, indicated that prenatal exposure to air pollution and short inter-pregnancy interval are potential risk factors, and suggest that further exploration of certain prenatal nutrients, metabolic conditions, and exposure to endocrine-disrupting chemicals is warranted. ASD-associated genes and functional convergence, researchers still cannot determine the ASD-causing genes and their impacts on the development of ASD. Further international networking and multidimensional studies are needed to reveal the facts in order to design effective treatment strategies (Lyall K *et al.*, 2017).

A review article Study in 2013, summarized environmental factors, which contributed to ASD pathogenesis through epigenetic modifications.

Moreover followed article in 2014 have continued to add to the evidence of epigenetic modifications in ASD. Some of these epigenetic modifications include DNA methylation, epigenetic proteins, gene polymorphisms associated with variation in diet, histone modifications, and microRNA dysregulation.

6. Genetic Factors

Family and twin studies have demonstrated that approximately 10% of children are diagnosed with ASD as a part of other genetic or neurological disorders, such as fragile X syndrome, tuberous sclerosis, phenylketonuria, or congenital infections secondary to rubella virus and cytomegalovirus. Moreover, if the family already has an autistic child, the possibility of having another child with autism increases 25 times in comparison to the general population. Twin studies have suggested that monozygotic (identical) twins have 60–90% concordance rate of having autism, while dizygotic (no identical) twins have a 0–24% decreased risk. Furthermore, the risk of ASD may be increased by structural variations or mutations (Abrahams, B. S., and Geschwind, D. H. 2008 - Bailey, A *et al*., 1995).

Genetic studies of ASD Since the disorder is heterogeneous, it is challenging to precisely identify the underlying genetics. Numerous networking approaches are required to investigate the loci that are responsible for ASD. The hypothetical risk factors for neurodevelopmental disorders result from health behaviors linked with socioeconomic factors, such as the use of recreational drugs or abuse of alcohol, parental mental health disorders, and genetic influences. Few studies offer a genetic understanding of ASD, and each has its advantages and limitations. The most common approaches are cytogenetic analysis association and linkage analysis studies, copy number variation (CNV), and, most importantly, DNA microarray analysis, as well as whole-exome sequencing analysis and transcriptomic analysis (Jeste S. S. and Geschwind D. H., 2014).

Aim of this study:

To determine whether there is a specific ABO blood type responsible in Autistic child. This was a descriptive-analytical study.

The current study aimed to answer two major questions as follows:

- Is there any relationship between father and mother's Rh blood with having autistic child
- Is there any relationship between mother and father's blood type ABO with having autistic child?

MATERIAL AND METHODS

We surveyed families of children with ASD ascertained through different Libyan Health Center in different area in Libya. Study sample Population, with a total number of 220 parents self-filling questionnaire by autistic parent's child. The data collection tool was a questionnaire made by the researcher. The questionnaire was approved by seven experts in this field and met the content validity ratio. Moreover, the data were analyzed using SPSS version 16 from 2018 to 2019.We surveyed families of autistic child and made laboratory blood group investigation to detect which specific blood group more frequent in parents ASD. This study particularly focuses on data obtained by investigators in the different region. This might ultimately help to improve the assessment and treatment of ASD on the Libyan population and worldwide in general. To determine whether there is a specific ABO blood type in parents of children with ASD. The study population included parents with autistic child. In the current study, 202 samples were studied.

Statistical Analysis:

The data obtained from the experiment were analyzed by using SPSS program Version (16).

RESULTS

In this study, we included a 220 child with autisms, the distribution of mothers and fathers of the children under study. The male children belong to mothers and fathers of positive blood groups, more than those of negative blood groups, looking at the weight of children at birth of 2.21 – 3.21 Kg, while the age of the children <=10 years belong to mothers and fathers of positive blood groups much more than the other age groups, Table 1.

Table 1: Some characteristics of children of Mothers and fathers blood group

Type of children characteristics		Mother Blood Group				Father Blood Group			
		+		-		+		-	
		No.	%	No.	%	No.	%	No.	%
Child Sex	M	148	67.3	14	6.4	151	68.6	11	25.5
	F	50	22.7	8	3.6	56	25.5	2	0.9
Child Weight/Kg	2.2-1.2	40	18.20	6	2.7	43	19.5	3	1.4
	3.21-2.21	100	45.5	9	4.1	102	46.4	7	3.2
	4.22-3.22	50	22.7	6	2.7	53	24.1	3	1.4
	5-4.23	8	3.6	1	0..5	9	4.1	0	0.0
Child Age/ years	<= 10	180	81.8	17	7.7	185	84.1	12	5.5
	11 - 16	15	6.8	5	2.3	19	8.6	1	0.5
	>16	3	1.4	0	0.0	3	1.4	0	0.0

Looking at the distribution of children with weight at birth compared with different blood groups, we found that those with blood groups O+ appear as higher than other blood groups, the highest for those birth weight 2.21 – 3.21Kg, followed by blood group A+ than B+ Fig 1.

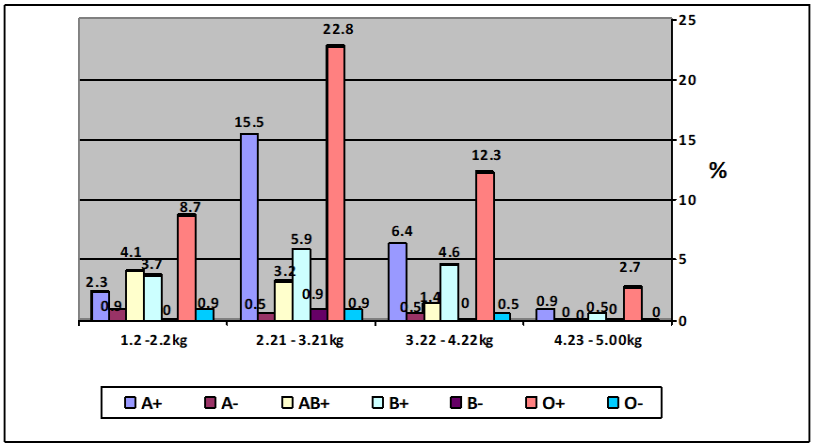

Fig 1: Show the blood groups of the children compared to weight at birth

Distribution of blood groups for male and female, it appear that O+, A+ and B+ are the highest, 31.9 and 14.5, 18.6 and 6.4, 12.3 and 2.7 respectively. However, these indicate that positive blood groups are more for children in this study, Fig 3.

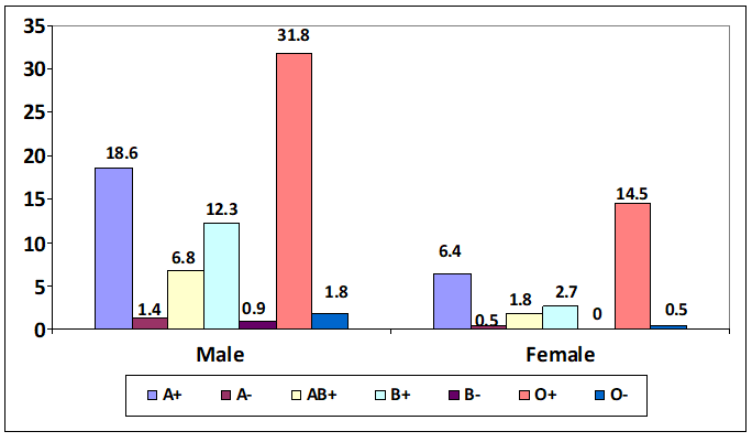

Fig 2: Show blood groups of children by sex in the study

Regarding the distribution of blood groups of children by different age groups/years, those with A+ group count for 25.0% out of the total study children, and the highest overall found to be with blood group of (O+) as 46.4%. However, the age group of <=10years old was the more as 91.8% of the total studied children (220), Table 2.

Table 2: Blood Groups of study children with children age in years

Blood groups of children	**Age of children/yrs**						**Totals**	
	<= 10		**11 – 16**		**>16**			
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
A+	52	23.6	2	0.9	1	0.5	55	25.0
A-	3	1.4	1	0.5	0	0.0	4	1.8
AB+	19	8.6	0	0.0	0	0.0	19	8.6
B+	31	14.1	1	0.5	1	0.5	33	15.0
B-	2	0.9	0	0.0	0	0.0	2	0.9
O+	91	41.4	10	4.5	1	0.5	102	46.4
O-	4	1.8	1	0.5	0	0.0	5	2.3
Total	202	91.8	15	6.8	3	1.4	220	100.0

Comparing the different blood groups of mothers, fathers and children, it was clear that the positive blood groups especially O+,A+ and B+ of fathers and children as (34.5,32.7, 46.4), (32.7, 31.4, 25.0) and (46.4, 25.0, 15.0%) respectively, Fig 3.

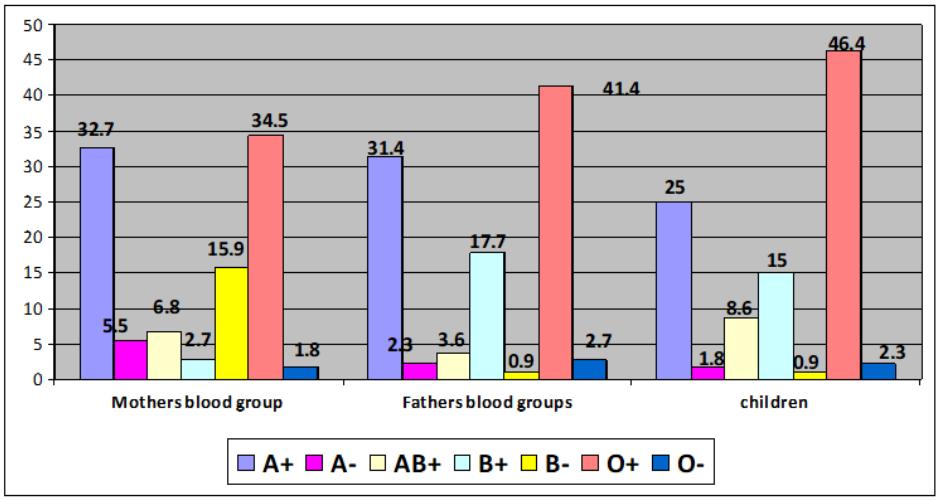

Fig 3: Compare the blood groups of mother and father of children under study

Considering the age of mothers and type of delivery, we found that more than two third of delivery within the age of 30 – 45 years old (76.8%) and the type of delivery nearly the same as 55.5% and 44.5% for normal and cesarean section, respectively, Table 3.

Table 3: Show age groups of mothers related to type of delivery

Age of mothers	Type of delivery				Total	
	Normal		cesarean section			
	No.	%	No.	%	No.	%
<30	7	3.2	14	6.4	21	9.6
30-45	96	43.6	73	33.2	169	76.8
>45	19	8.6	11	5.0	30	13.6
Total	122	55.5	98	44.5	220	100.0

Relationship of some medical problems (Jaundice) and the blood groups of father, it was those positive blood groups 33.6% report to have Jaundice and 4.5% report not to have Jaundice, for Oxygen deficiency, those with negative blood groups report that 49.5% of the studied children have oxygen difficency, while only 2.7% have no oxygen deficiency, Fig 4.

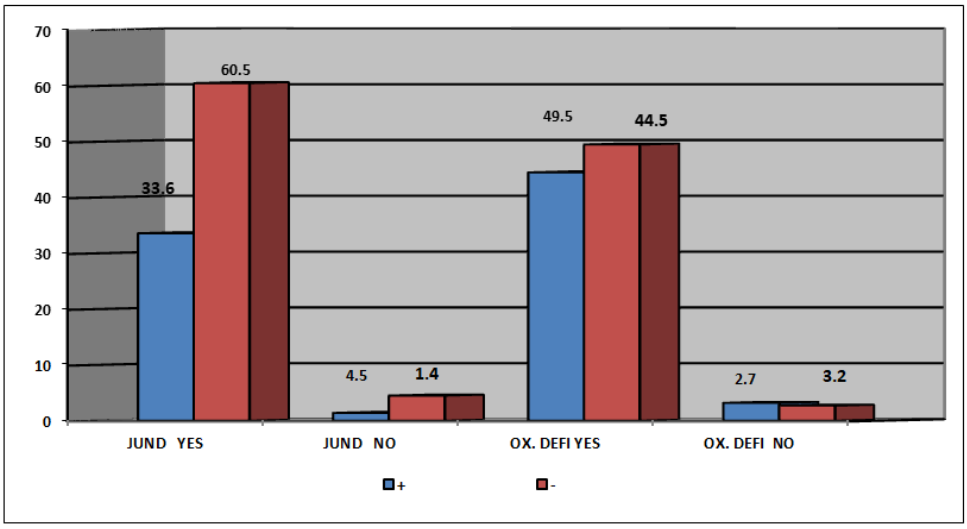

Fig 4: The father's blood groups +/- for children with Jaundice and Oxygen deficiency

Some of the medical related problem of children of mothers with blood groups, +/- report that the mothers with blood groups positive higher in percentage of children with Jaundice, than those mothers with negative blood groups, as 31.8 and 3.2% respectively. Children with Oxygen deficiency 43.2% with mothers of positive blood groups, those children with Birth asphyxia 37.7% belong to mothers of blood groups positive, mother have Rh negative 63.6% belong to mothers of positive blood groups.

Table 5: Show some of the medical related problems of the Children related to mothers blood groups +/-

Some of the medical problems of the children		Mother Blood Group			
		+		-	
		No.	%	No.	%
Jaundice	Yes	70	31.8	7	3.2
	No	128	58.2	15	6.8
Oxygen deficiency	yes	95	43.2	10	4.5
	No	103	46.8	12	5.5
Birth asphyxia	yes	83	37.7	7	3.2
	No	115	52.3	15	6.8
Type of Delver	Normal	108	49.1	14	6.4
	Caesarian	90	40.9	8	3.6
Duration of pregnancy	Mature	129	58.6	15	6.8
	preterm	69	31.4	7	3.2
(mother have) Rh negative -	Yes	58	26.4	10	4.5
	No	140	63.6	12	5.5

Conceding the relative marriage association of mother and father 91.3%, while the rest of sample distributed between different marriage relatives, daughter of aunt (daughter mothers of sister), the same family, daughter of mothers brother, daughter of uncle (daughter of fathers brothers), daughter of uncle and aunt, were representing 2.7, 2.3, 0.9, 2.3, 0.5 respectively.

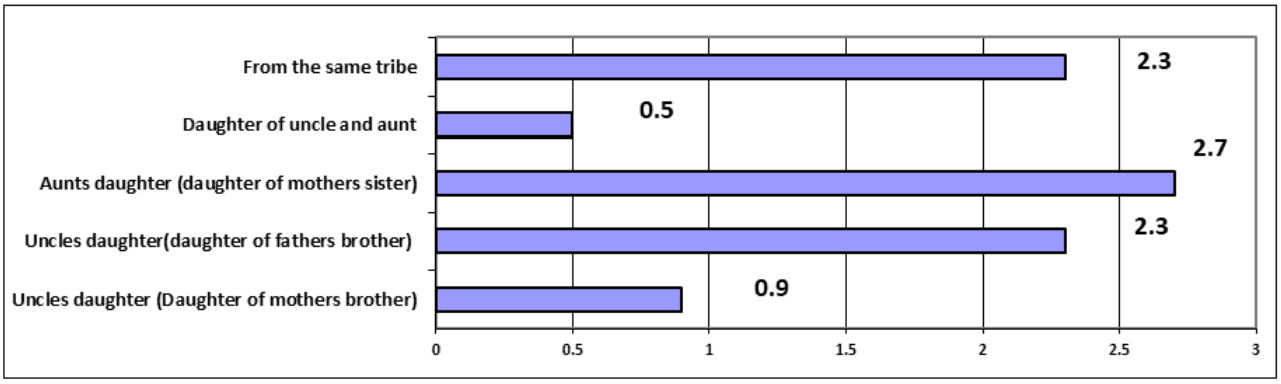

Fig 5: The relationship of the mother and father of studied children

DISCUSSION

We evaluated the effects of paternal age, maternal age on offspring autistic child, we excluded that the advancing parental age not associated with increases risk of ASD, this confirmed by older men and women are more likely than young ones to have a child with autism, according to multiple studies published in the past decade. Especially regarding fathers, this effect is one of the most consistent findings in the epidemiology of autism.

The link between a mother's age and autism is more complex: Women seem to be at an increased risk both when they are much older and much younger than average, according to some studies. Even so, the absolute risk of having a child with autism is low, even for the oldest parents. The researchers in the 2017 study calculated that about 1.5 percent of children born to parents in their 20s will have autism, compared with about 1.58 percent of children born to parents in their 40s (Sandin S *et al.*, 2016).

Other factors must contribute as well. A mathematical model of autism inheritance indicates that de novo mutations account for no more than 20 percent of the increased risk of autism among children of older fathers.

The current study showed that there was no relationship between mother's Rh blood and having autistic children. In other words, mother's Rh blood incompatibility will not increase the likelihood of

children born with autism. In contrast, of the last findings, Sediqi, Majlesi (2002), Rezaie, colleagues (2008), Afrouz, and colleagues (2009) studies showed that mother's blood incompatibility would increase the likelihood of the birth of disabled child. It may be some genetic predisposition is associated with the parental Rh blood and autistic child.

We confirm prior findings that advancing parental age increases risk of ASD, particularly for ASD with ID, in a manner dependent on co-parental age. Although recent attention has emphasized the effects of older fathers on ASD risk, an increase of years in maternal age has greater implications for ASD risk than a similar increase in paternal age. Moreover, found consistently similar risk patterns for related disorders and markedly different patterns between autistic and schizophrenic disorders. Older fathers and mothers both conferred increased risk for autistic but not schizophrenic disorders, but autism risk was reduced in younger parents and offspring of younger mothers had increased risk for many schizophrenic disorders. Risk for most disorders also increased when parents were more dissimilarly aged. Monotonically increasing autism risk is consistent with mutation accumulation as fathers' age, but this explanation is invalid for schizophrenic disorders, which were not related to paternal age and were negatively correlated with maternal age.

We can't say from a study like this one that the association is causal, so parents shouldn't worry that a child who has jaundice will develop autism, It may be some genetic predisposition is associated with the development of jaundice and autism.

This study investigated reduced oxygen supply, during labor, during delivery, during the prenatal period; during early infancy have no effect in autism outcome. This similar founding in old influence autism risk, we cannot say that definitely from our study, but that certainly is one possibility.

Male children understudy was belong to mothers and fathers of positive blood groups higher than those belong to parents of negative blood groups, the same picture found that those children belong to weight groups 2.21-3.21Kg, and for age of the studied children that most of them ware from the age groups of <=10 years old.

Children born to parents who are 35 or older are at an increased risk of autism, and the risk continues to rise with parental age, a new study suggests. For schizophrenia, by contrast, the increased risk is limited to those born to mothers in their teens or early 20s. The overall positive blood groups found to be more for children with autism.

That parental age influences autism risk in opposite directions hints at separate underlying mechanisms, for instance, the risk of autism from having an older father may stem from spontaneous mutations in sperm that accumulate over time. This type of mutation may be less important for schizophrenia risk. (Some have cast doubt on the aging sperm theory in autism as well, however).

The researchers controlled for variables that influence autism risk, such as a family history of psychiatric conditions and birth complications. However, because older mothers have a high risk of complications such as preterm birth, controlling for those problems may lead to artificially low estimates of the effects of maternal age.

The same blood incompatibility causes the outbreak of hemolytic disease which if not treated on time leads to chronic stress followed by damages to the central nervous system. The damages to the central nervous system will increase the chance of miscarriage, stillbirth, cerebral palsy, paralysis of limbs, and intellectual disability.

The findings showed a relationship between mother and father's blood types, the most frequent blood type in both groups was O+. In accordance with the findings of the current study of Afrouz and colleagues (2009) no significant relationship between father's blood type and having disabled children, mother and father's blood types, father's blood type and mother's blood type and having disabled children were observed. In line with the discretional data collected, in the present study, show the most frequent blood type in both groups was O+, A+, and B+, respectively. This finding put the light on the positive blood groups of parents. However, the authors are working on the genetic factors effects and their contribution to autism syndrome in children of different age groups.

RECOMMENDATION

We suggest running more intensive studies on the genetics factors related to the children and their father and mothers aspect. Encourage more community studies related to different aspects of factors may have effects on cause of conditions.

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