

Autism through the eyes of a believer

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I am sure that all the readers will wonder what brings believers in a review article in a medical journal. Well, believers come in different ways, shapes, and forms, not necessarily religious believers. The believers meant in this article are those who believe in the rights of coexistence, and this is the ultimate goal of each family who has a child with autism 'coexistence'.

What is autism? I am sure that despite all the awareness campaigns taking place all over the world, there are still many of us, medical professionals, who feel at loss when faced with a child with autism. Knowledge of autism will take away a lot of the anxiety we feel when dealing with such patients. Autism is a lifetime disease and is not just restricted to childhood. Greater knowledge of autism will enable us to provide patients with the necessary medical help they seek.

How do I deal with a patient with autism? How can I communicate with such patients? How can I examine them without overloading their sensory system and without scaring them of the unexpected? What are the frequently encountered ENT problems in such patients? When should autism be suspected? When to refer and who to refer to? What are the precautions that should be taken when dealing with such patients? Last but by no means the least, how should I deal with their caregivers?

All these questions face most if not all of us on a daily basis during our clinical practice once it is known that we have to deal with a patient diagnosed with or suspected to have one of the autism spectrum disorders (ASDs), in addition to several mixed feelings, thoughts, and reactions. Our experiences range from just a casual examination of such patients in the ENT clinic, to individuals who have spent most of their professional lives working in places dedicated to healing such patients. These are the believers, the true ones. Therefore, if one wishes to gain knowledge on autism in the best possible way, know it and see it through the eyes of a believer!

What is autism?

ASDs are pervasive and life-long neurodevelopmental disorders characterized by impaired socialization, impaired

verbal and nonverbal communication, and restricted interests and repetitive patterns of behavior. It is believed to be one of the fastest-growing disabilities in children. Although knowledge of and research on ASDs are on the rise worldwide, most studies across different nations have reported wide variations among healthcare professionals in terms of the diagnosis, treatment, and prognosis of autism [1].

In other words, children with autism are special children with special needs as they have their own ways of perceiving the various stimuli, whether sensory, motoric, vestibular, or proprioceptive, and therefore, they respond differently and act uniquely within our world through different manners of communication.

Autism is one of the pervasive developmental disorders (PDDs), a group of conditions that also includes Asperger syndrome, PDDs not otherwise specified (PDD-NOS), Rett syndrome, and childhood disintegrative disorder. Collectively, autism, Asperger syndrome, and PDD-NOS are often referred to as ASDs. However, Rett syndrome and childhood disintegrative disorder fall outside the autistic spectrum.

Individuals with autism can have very different symptoms, hence the term 'autism spectrum disorder'

ASD is a spectrum as it is a highly descriptive word for such a group of diseases. No child on this spectrum is similar to another; they all have different clinical presentations and different degrees of severity of disability and functioning; therefore, they may lie all along the spectrum of the disease. Although they all share some common areas of deficits that are considered as the universal markers for diagnosis (social interaction, communication, and restricted and odd behaviors and interests), each child on the ASD presents clinically as a separate entity and therefore has to be managed individually.

Autism is characterized by qualitative impairments in communication and social interaction, and by restricted, repetitive, and stereotyped patterns of behaviors and interests. Abnormal development is present before the age of 3 years. The clinical features required for a diagnosis of autism are set out in the *International*

Classification of Diseases (ICD-10) and the Diagnostic and Statistical Manual of Mental Disorders, 4th ed. (DSM-IV).

Individuals with autism have a history of language delay (single word or phrase speech delay), and a quarter lose previously acquired skills (regression), most commonly in the second year of life. A third of individuals develop epilepsy, and three-quarters have mental retardation. Males are affected more commonly than females (3.5–4.0:1).

It has been reported previously to affect approximately five of every 10 000 children; its incidence has increased 10-fold since the early 1980s, with most of this increase not explainable by changing diagnostic criteria [2]. Recently, the prevalence of ASDs in the USA was estimated to be one in every 110 individuals [2].

Early signs of ASD are usually present before 18 months of age, and parents usually know that there is something wrong with their kid. Family members and healthcare providers should value parents' instincts and concerns expressed in relation to their child's development.

Healthcare providers should be aware of the fine line between typical and atypical development and be able to identify the red flags that indicate that a child should be evaluated and screened.

Treatment should begin as early as possible using validated screening tools and should be tailored for every child to meet his/her needs. Early intervention and an educational approach may help in improving the quality of life of an autistic child and the family members.

Identifying autism

ASD involve functions across more than one domain, and not just physical illness. The child's development and function should be considered. Factors such as speech, eye contact, socialization, physical coordination, sensory integration, and possibly behavioral challenges should be kept in mind. In the context of autism spectrum conditions, there may be a greater degree of complexity than just speech delay.

These delays should be identified early and requires immediate referral for intervention, and the families require considerable support in order to navigate the service delivery system to ensure optimal function for the child, the family, and the community. This is not a situation where antibiotics can be prescribed, with an expectation of a recovery. This is a life-long condition. It affects the child, the family, and the community. We need to be sensitive to it, identify it as early as possible, and make the appropriate referrals.

As clinicians, we do not know everything about everything, but we can identify conditions and make appropriate referrals for assessment and management; for example, if a child has a heart murmur, he/she will be referred to a cardiologist. By the same token, if a child has a speech delay or a more complex set of developmental

features, the child has to be referred to the appropriate specialist – a speech pathologist, a developmental pediatrician, or a child neurologist.

When to suspect autism? When to refer for diagnosis?

In light of the high prevalence of children with ASD, physicians are likely to have one or more children with this disorder in their practices. Therefore, it is necessary that a pediatrician be aware of the symptoms and causes of autism. First, the spectrum of causes and presentations of the ASDs are confusing and complicate the diagnosis; yet, physicians must identify autism expeditiously.

Research has shown that early diagnosis and intervention significantly improves a child's long-term outcome. Parental reports of early social or language deficits, delays, or regressions should be addressed promptly and thoroughly, and pediatricians should not delay investigations of abnormal development to avoid placing additional stress on the family. There are various screening tests for autistic behaviors, such as the Checklist for Autism in Toddlers and the Pervasive Developmental Disorder Screening Test, but there is no definitive medical or biological test for autism [3].

We ask our otolaryngology colleagues to watch for the 'red flags' of autism and report these findings to a pediatrician and, if appropriate, suggest a workup including referral for further evaluation to a developmental pediatrician or other specialist.

The so-called epidemic of autism has more to do with our expanded diagnosis of the ASDs than to actual increases in the numbers of children with the condition.

What is the role of the otolaryngologist?

Otolaryngologists play a key role in the care and diagnosis of children with speech delays and therefore should be aware of the early signs of autism.

Otolaryngologists can serve an important function in the early diagnosis and treatment of autism because of the prominence of speech delays in children with the disorder. Speech delay, suggestive of hearing problems, often results in these children being referred to and seen by otolaryngologists before other clinicians or parents have considered autism as a possible cause.

When a young child has a noticeable speech delay, we are among the first specialists to be consulted by pediatricians to rule out ear conditions and hearing loss. If we, as otolaryngologists, are aware of some of the early signs of autism, we can suggest to the pediatrician that the child be referred for further evaluation by a developmental pediatrician for diagnosis.

We do not expect the otolaryngologist to make a diagnosis of autism. Otolaryngologists should perform a routine ENT physical evaluation and also observe the child's behavior

during the routine examination without taking additional time or asking questions. We ask our otolaryngology colleagues to watch for the 'red flags' of autism and report these findings to a pediatrician and, if appropriate, suggest a workup including referral for further evaluation to a developmental pediatrician or other specialist.

'When something just doesn't seem right about a child, then otolaryngologists should act on their hunch. All of us as clinicians need to be sensitized to be aware when something does not quite fit, he said. We may be missing something if we don't pay attention to the subtle differences' – quoted from Leslie Rubin, MD, Director of the Autism Program at Children's Healthcare of Atlanta's Hughes Spalding Children's Hospital.

Possible red flags for autism

Social interaction

- (1) The child does not respond to his/her name.
- (2) The child does not smile when smiled at.
- (3) The child has poor eye contact.
- (4) The child seems to be in his/her 'own world'.
- (5) The child seems to tune people out.
- (6) The child is not interested in other children.
- (7) The child seems to prefer to play alone.
- (8) The child throws intense or violent tantrums.
- (9) The child is overly active, uncooperative, or resistant.
- (10) The child does not know how to play with toys.
- (11) Child does not play 'pretend' games.
- (12) The child gets things for him/herself only.
- (13) The child is very independent for his/her age.
- (14) The child does things 'early' compared with other children.
- (15) Has trouble understanding others' feelings or talking about their own feelings.

Communication

- (1) Does he/she not speak as well as other children his/her age?
- (2) The child cannot explain what he/she wants.
- (3) The child's language skills are slow to develop or speech is delayed.
- (4) The child does not follow simple directions.
- (5) At times, the child seems to be deaf.
- (6) Unusual voice quality.

Repetitive behaviors and restricted interests

- (1) Repetitive movements with objects.
- (2) Repetitive movements or posturing of the body, arms, hands, or fingers.
- (3) The child gets 'stuck' doing the same things over and over and cannot move on to other things.
- (4) Repeat words or phrases said to them.
- (5) The child spends a lot of time lining things up or placing things in a certain order. He/she has trouble adapting when the routine changes.

Screening should also be performed if the child

- (1) Does not babble or gesture by 12 months of age.
- (2) Does not say single words by 16 months of age.
- (3) Does not say two-word phrases on his or her own (rather than just repeating what someone says to him or her) by 24 months of age.
- (4) Has ANY loss of ANY language or social skill at any age [1].

If one or more of the red flags are suspected, we then come to the question 'Who to refer to?'

Referral to a multidisciplinary team is the most appropriate, economical, and time-saving and energy-saving action; however, these teams are still not so popular in Egypt. Therefore, referral to a pediatric neuropsychiatrist, a psychologist, or a phoniatrician is the first step that should be taken and then they will proceed accordingly.

How can I communicate with a child with autism?

Deficits in communication represent one of the core symptoms of ASD. Up to 25% of individuals with ASD lack the ability to communicate with others using speech sounds. Although autism is intrinsically a socially isolating disorder, nonverbal children with ASD are further isolated by their severe communication barriers. These children are often taught to use some form of augmentative and alternative communication methods in order to make requests and interact with others. Examples of such nonspeech approaches include voice-output communication devices that read messages aloud, manual signs, and the Picture Exchange Communication System [4].

Thus, using parents and caregivers as facilitators of communication will make this task much easier and increase the child's awareness of what to expect and what not to expect. It will also help the ENT specialist determine the degree of disability he is dealing with and aid planning of a proper intervention plan as well as referral system for the child. The ENT specialist needs to explain every step of the examination procedures using a multisensory approach using his/her whole body, facial expressions, appropriate eye contact, a clear voice, and using short simple clear sentences to provide instructions or information.

Do they perceive various sensations differently?

It is a well-known fact that individuals with autism show abnormal responses to sensory stimuli. However, some professionals believe that individuals with autism actually experience sensory stimuli in an unusual way and that the bizarre perceptual experiences actually cause the 'abnor-

mal' reactions. This has led to the idea that, when severe, such perceptual problems contribute toward confusion, social withdrawal, communication and cognitive problems, stress, and obsessive-compulsive behaviors.

Whether the latter idea is true or not is yet to be determined, but the evidence of abnormal perceptual experiences has emerged, over many years, from individuals with autism themselves. They have repeatedly reported that their tactile, auditory, and visual experiences are, in some way, different from those of most individuals. Unfortunately, however, some professionals remain skeptical, and continue to dismiss such accounts as anecdotal.

These conflicting ideas result in confusion and create considerable doubt about the efficacy of treatments considered to alleviate the sensory problems. Is there any way to clarify this confusion? Certainly, if such problems actually exist, it should be possible to describe them and assess them in some way, as is now possible for both the auditory and the visual problems.

Do they really hear and not respond or do they actually not hear therefore they do not respond or do they hear differently?

Children and adults on the ASD suffer from various auditory problems; apart from deafness and partial hearing loss, several less well-known auditory problems may be found both in the general population and, to a greater extent, in patients with autism. Here, we will be presenting some of them to increase the reader's awareness.

Auditory dyslaterality problems: hearing some sounds well with one ear while hearing them differently with the other leads to misinterpretation as letters are lost or partially or not heard at all with the other ear as their sequence is misheard.

Slowed auditory perception: inability to habituate to (cut out) certain sounds, leading to particular loss of concentration in noisy situations or in the presence of background noise (as most of us do, e.g. when sleeping with background noise – especially near a noisy road).

'Supersensitive' hearing: this is generally not perceived as a problem; it means that a child can hear a 'silent dog whistle' or the 'far end', but may be a factor in hyperacusis of a telephone conversation (i.e. hypersensitivity to sound). It may present as 'hyperacusis', often associated with tinnitus, which may lead to avoidance of particular situations, as they become stressed by particular sounds that do not bother other individuals during socializing, shopping, or traveling.

Such sounds seem much louder than they actually are and the individual is unable to block them out easily. The sounds are individual and can include people eating, television, vacuum cleaners, and also quieter sounds such as a zip being pulled.

Loudness discomfort: the majority of individuals can tolerate sounds up to 100 decibels, but some individuals with autism have a far lower tolerance.

Many individuals with autism have one or more of these auditory problems. These problems can leave the child unable to concentrate properly as extraneous sounds constantly impinge upon him. Thus, when listening to others, the child may hear a single word or two or even a simple sentence, but longer sentences may be 'broken up' by intruding background noises and the meaning may be lost, as it is if one tries to listen to a badly tuned radio.

Some individuals certainly have hyperacusis as mentioned by an individual on the ASD (diagnosed with autism as a child). She was so badly affected by some sounds that, as she told her mother, 'The sound was the only thing that drove me crazy because I was so scared and sound was going on all the time. It was hard to get away from it...'

Therefore, such problems can lead an individual with autism to avoid, run away from, or block out the noises he/she dislikes, blocking out many important sounds as well, thereby losing a valuable aid to learning and communication.

Otitis media in autism

The frequency of ear infections, ear tube drainage, and deafness was examined through parental reports in autistic and yoke-matched, normal children. For the autistic group, these difficulties were additionally examined as a function of the children's cognitive and communication abilities, verbal versus nonverbal status, sex, and degree of autistic symptomatology.

Autistic children had a greater incidence of ear infections than matched normal peers. Lower-functioning children had an earlier onset of ear infections than their higher-functioning autistic peers. Ear infections coexisted with low-set ears, and with a higher autistic symptomatology score. The findings are discussed in terms of greater CNS vulnerability in the autistic children, which is likely present since embryogenesis. The possible adverse consequences of intermittent hearing loss on language, cognitive, and socioaffective development are considered.

Otitis media with effusion or 'glue ear' is the most common cause of hearing loss in children; this fluctuating condition can persist in some children, leading to detrimental effects on behavior and development. Anti-social behavior or inattentiveness is consequent on the child's inability to hear, leading to frustration, apparent disobedience, and less use of language as a means to ends. Deficits in speech, language, and behavior, particularly in children with early-onset otitis media with effusion, may lead to reduced cognitive ability [5].

Autism and central auditory processing disorder

Central auditory processing disorder (CAPD) is a complex and heterogeneous group of auditory-specific

disorders usually associated with a range of problems among the processes responsible for generating auditory-evoked potentials and other behaviors such as auditory localization or lateralization, auditory discrimination, and auditory pattern recognition. CAPD may underlie or interact with other neuropsychiatric conditions. As characteristics of the auditory function have many clinical and neuropsychological similarities to those of ASD, it would be interesting to clarify whether they share the fundamental pathophysiology or a common clinical and genetic propensity.

Children with ASD usually show two general types of language deficits: either phonologic-syntactic (production of speech sound-grammar) or semantic-pragmatic (communicative usage of language). It is believed that young autistic children may also have a language disorder. Central auditory processing problems may underlie or interact with other difficulties such as speech-language disorder and ASD. We agree that there are several clinical and neuropsychological similarities between ASD and CAPD. Because of the issues mentioned above, it should be clarified whether they are the same condition in the sense of being part of a wider spectrum or whether they share common clinical and genetic propensities to create appropriate intervention plans [6].

Hearing loss in autism

Hearing deficits in autism occur at similar rates at all levels of intellectual functioning; thus, covariation with intellectual impairment per se may not account for all of the variance in hearing deficits in autism.

Hyperacusis is common, affecting 18.0% of the autism group and 0% in an age-matched nonautism comparison group. In addition, the rate of serous otitis media (23.5%) and related conductive hearing loss (18.3%) appeared to be increased in autistic disorder. The study emphasizes the need for auditory evaluation of individuals with autism in order to refer those with severe to profound hearing loss for aural habilitation and to follow those with mild-to-moderate hearing loss because of the risk of deterioration [7].

According to the study carried out by Rosenhall *et al.* [7], some of the children with autism have a combination of autism and hearing loss, making communication problems still more pronounced than either impairment separately. It is therefore very important to assess the hearing of autistic children and to initiate the necessary aural habilitation when hearing is compromised. In most of the autistic boys in the present study, this habilitation had already been initiated, with the use of communication suitable for the children, including sign language. secretory otitis media, resulting in fluctuating conductive hearing loss, has been reported to be common among autistic children.

There are some major problems associated with the evaluation of hearing in individuals with autism, given that they are often quite difficult to test. There is a risk for overestimation of the prevalence of hearing loss because

of difficulties in obtaining a pure tone threshold at normal levels. By the same token, mild hearing loss may easily remain undetected. Many severely autistic children cannot be tested using psychoacoustical methods.

The alternative neurophysiological method chosen by most researchers is auditory brainstem response (ABR). With this method, it is possible to detect pronounced peripheral hearing loss, but slight hearing loss is difficult to diagnose. One example is hearing loss involving only low frequencies, which is impossible to detect with ABR. Another situation that may complicate hearing assessment with ABR is a concomitant brainstem lesion [7].

All the above-mentioned auditory problems highlight the importance of a thorough examination of such individuals' hearing abilities, which further emphasizes the need for a solid referral system between audiologists and ENT specialists.

Olfaction and taste processing in autism

Children with autism often present with unusual responses to sensory stimuli. This has been confirmed by parent report studies showing that children with autism experience increased sensory symptoms when compared with children with typical development or with general delays. The majority of laboratory studies have tested theories of hypoarousal and hyperarousal as explanations for sensory dysfunction in this population. As a whole, these studies do not provide strong support for a global impairment in arousal in autism.

Difficulty in identifying basic tastes and smells may contribute toward high rates of food refusal and selectivity reported in children with autism. The development of food preferences begins in early toddlerhood, and depends on a complex interaction between biological predispositions (e.g. taste or olfactory processing), tendencies toward food neophobia (i.e. rejection of novel foods), the ability to learn associations between foods and contexts, and the eating environment itself.

Future study of chemosensory processing in autism may show important links between brain function, clinically relevant behavior, and treatment. Furthermore, recent advances in the genetics of taste and olfaction, as well as the relationship between olfactory impairments and neuropsychological and social dysfunction in other disorders, raise the possibility that chemosensory dysfunction could serve as a biobehavioral marker in autism [8].

Visual problems

Approximately 70% of information about the world is taken in through the eye. Unfortunately, there are a group of visual perceptual problems (known by various names such as visual discomfort or scotopic sensitivity – Irlen – syndrome) that may remain unidentified by an ordinary eye test; the following list identifies some of these visual problems, several of which are linked to poor coordination between the eyes, unexplained loss of visual acuity, losing

much of the features, sees things as darker than they actually are, an insufficient ability to focus.

Where such problems exist, there is difficulty in recognizing people and objects correctly. Could they also explain why individuals with autism have difficulties in understanding the emotions of others and in interpreting body language? Do they actually see the smile on an individual's face or his/her gestures correctly? This is doubtful if we consider that Gunilla Gerland talks of 'people with blank faces' in her book. Given that similar problems can leave a individual with dyslexia 'word blind', I would suggest that the more visual severe problems found in autism could leave the individual 'meaning blind' [9,10].

Highlights on diagnostic tools

The generally accepted 'gold standard' assessment tools for autism are the Autism Diagnostic Interview-Revised, a semistructured, interviewer-based schedule administered to the primary caregiver, and the Autism Diagnostic Observational Schedule, a semistructured assessment carried out with the individuals themselves. Although these schedules are informative for the clinician, autism remains a clinical diagnosis.

There are no universal agreements with respect to abnormalities of the brain structure, and no biomarkers have been detected for confirmation of clinical diagnosis. The diagnosis is mainly made on the basis of a variety of clinical features such as qualitative disturbance in communication, social interaction, and restricted interests or activities [6].

Prognosis

Autism is a lifelong condition with a highly variable clinical course throughout childhood and adolescence. Many adults with autism require lifelong full-time care. About 15% of adults with autism will live independent lives, whereas 15 to 20% will live alone with community support. Verbal and overall cognitive capacities seem to be the most important predictors of ability to live independently as an adult [11].

Aim of intervention

The ultimate goal of every clinician working with a child on the ASD and his caregivers is to improve social function, communication, and cognitive ability, and reduce the repetitive, obsession, and comorbid behaviors seen in autism, with minimal adverse effects of treatment, in order to also improve social function; behavioral function; cognitive function; communication; repetitive behavior; global function; self-care; family function; and adverse effects of treatment.

FAQs about therapy in autism

Although there are no defined mechanisms of pathogenesis or curative therapy currently available and ASDs may

still be considered not completely treatable, the ENT specialist of a family with a child with autism will not always be asked questions about ENT troubles; instead, he/she can be faced with all sorts of queries about new lines of therapy, medical treatment, or dietary intervention.

The following section provides information about the various interventions and their efficacy as proven by clinically significant results from randomized control trials (RCTs), quasi-randomized trials, or cohort studies on the effects of therapy on symptoms of autism in children.

A note from a believer: each child on the ASD has a different repertoire of symptoms, with various responses to various therapeutic techniques. This leads to the following question: Should I allow the parents to take the risk if it's not harmful

What are the effects of early intensive multidisciplinary intervention programs on children with autism?

The review of the various literature published concluded that early intensive behavioral interventions resulted in improved outcomes between groups, but for individuals, there was considerable variability in outcomes. It concluded that early intensive behavioral interventions are effective in some, but not all, preschool children with autism. Despite the lack of robust RCT evidence, there is also consensus on the basis of clinical experience that early intensive behavioral interventions are likely to be beneficial [12].

What are the effects of dietary interventions in children with autism?

No RCTs have been carried out on the use of digestive enzymes, the use of omega-3 fish oil, probiotics, vitamin A, C, B6, and melatonin whereas studies on the gluten and casein exclusion diet have shown that restricted diets are often inconvenient for families and can be expensive. Until the results of large RCTs of dietary interventions are available, healthy, balanced diets are recommended for children with autism [12].

What are the effects of drug treatments on children with autism?

No RCTs have been carried out on the use of immunoglobulins, memantine, secretin, and olanzapine whereas in a RCT, response rates to methylphenidate hydrochloride in children with autism and hyperactivity were lower than those in children with ADHD alone; pharmacogenetic factors are likely to underlie this difference in the efficacy of methylphenidate in the two disorders. Growth parameters and blood pressure should be monitored in children treated with methylphenidate.

Although RCTs have shown that risperidone may be useful for behavioral symptoms of autism, its adverse effects limit its use in children. Further long-term studies are required to monitor possible adverse effects, including weight gain, increased blood pressure, and extrapyramidal effects. Also, prolactin levels should be measured regularly in children receiving risperidone before and during treatment.

There is clinical consensus that selective serotonin reuptake inhibitors are beneficial to children with autism; however, robust RCTs are required to assess their effectiveness and safety [12].

What are the effects of nondrug treatments on children with autism?

The American Academy of Pediatrics (1998) has suggested that auditory integration training should be used only for research purposes. Treatment with auditory integration training may involve high costs to the family. In addition, no RCTs have been found on the use and efficacy of the sensory integration training [12].

New trends in therapy for autism

Hyperbaric oxygen therapy for the treatment of children with autism: a systematic review of randomized trials

There are many reports on the possible role of neuroinflammation in autism. This neuroinflammation can be a possible target for the treatment of some cases with autism with hyperbaric oxygen therapy (HBO). Besides, the regional cerebral blood flow is decreased in the bilateral frontal lobe, temporal, limbic system, and basal ganglia in ASDs.

Moreover, it is proposed that HBO may improve the cerebral hypoperfusion and decrease brain inflammation as well as oxidative stress in autism. Contrary to some expectations, HBO therapy does not exacerbate the increased oxidative stress in autism. Moreover, it does not affect the plasma-oxidized glutathione level. However, HBO therapy decreased C-reactive protein level in a fasting blood sample.

In conclusion, the results supporting the efficacy of HBO therapy have not been replicated. In addition, none of these trials used a placebo group. Therefore, these results are not conclusive for the efficacy of HBO therapy for the treatment of autism. However, the promising effects reported by case series studies and only multicenter, randomized, controlled trials should lead to further clinical trials with more rigorous scientific methodologies [13].

Autism spectrum disorders: is mesenchymal stem cell personalized therapy the future?

Autism and ASDs are enigmatic conditions that have their origins in the interaction of genes and environmental factors. At present, there are no preclinical studies on the use of mesenchymal stem cells (MSCs) in ASD models.

There is just one clinical trial on the safety and efficacy of human umbilical cord-MSCs and human cord blood mononuclear cells transplantation in patients with autism in China. Cellular therapy could represent a new frontier in the treatment of several diseases. Despite the fact that MSCs have been used in several clinical trials, the long-term safety of MSC-based therapies is not yet well established; this could be a major limitation to clinical translation. However, personalized stem cell therapy will be the most effective treatment for a specific autistic child, leading to a new era in the management of autism in the near future [14].

Adult patients with autism

Autism is not a childhood illness that the child will grow out of as he becomes older. You can be faced with adolescent or adult patients during your day to day practice. The following section will provide a short insight into the persisting problems that older individuals with autism face. This has to be taken into consideration when examining and interacting with them.

For those diagnosed with ASD in childhood, most will become adults with a significant degree of disability. As summarized by Seltzer *et al.* [11], there is evidence of persisting social and communication deficits, together with psychiatric and behavioral comorbidity. They concluded that, despite considerable heterogeneity in social outcomes, 'few adults with autism live independently, marry, go to college, work in competitive jobs or develop a large network of friends'.

However, the trend within individuals is for some functional improvement over time, as well as a decrease in autistic symptoms. Some authors suggest that a subgroup of 15–30% of adults with autism will show more positive outcomes [11].

These findings were generally in agreement with other recent publications in the field, particularly those focusing on outcome for higher-functioning individuals. For the more able individuals, there was a wide range of adult attainment, with a subgroup of 15–25% living independently, participating full time in post secondary education, and/or employed in the general workforce.

Those patients with comorbid ASD and intellectual disability conformed to the stereotyped outcome expected previously for all autistic individuals, that of continued low functioning and dependence into adult life [15].

Is autism hereditary?

How will you answer when you are faced with a mother asking you such a question: will I have another child with autism?

There is strong and convincing evidence from two main sources that autism without a diagnosable cause is a heritable disorder. First, the rate of recurrence in siblings of affected individuals is 2 to 8%, much higher than the prevalence rate in the general population. Second, early

twin studies in the UK and Scandinavia have reported that monozygotic twins had a rate of concordance 60% for classic autism, with no concordance found between dizygotic twins.

Despite the evidence from twin and family studies, the identity and number of genes involved are not yet known. Data from whole-genome screens in multiplex families (families with more than a single affected family member) strongly indicate that 10 or more genes interact to cause autism. Cytogenetic abnormalities in individuals with autism have been found on almost every chromosome. Autism, therefore, seems to be multigenic in that similar autistic phenotypes may arise from different genes or gene combinations in different families [3].

Although physicians must diagnose ASD promptly in their patients to provide proper treatment, we emphasize that tests for the many but rare genetic conditions reported in association with autism are stressful, costly, and often unavailable outside a research project.

DNA studies are expensive and have a very low yield unless the family history, medical history, presence of mental retardation, or dysmorphic or other findings on examination suggest a diagnosable condition. The benefit of testing for a high-functioning child with a normal appearance and IQ and moderate social and language impairment is minimal.

Given the recurrence rate of 2 to 8% in siblings of affected children and the fact that the initial diagnosis of autism is made between 1 and 4 years of age, it is especially important to offer parents information about the risks of recurrence before they conceive another child. Physicians must also be attentive to the psychological concerns of the family and be prepared to inform the parents of children with autism about the state and federal services available [3].

If you are a pediatric otolaryngologist and come across a number of infants you will be frequently asked this question: is measles mumps rubella incriminated in autism??

In the UK, the measles mumps rubella (MMR) vaccine was the subject of controversy after the publication of a 1998 paper by Andrew Wakefield and colleagues reporting a study of 12 children who had bowel symptoms along with autism or other disorders, including cases where onset was believed by the parents to be soon after the administration of the MMR vaccine. In 2010, Wakefield's research was found by the General Medical Council to have been 'dishonest', and *The Lancet* completely retracted the original paper. The research was declared fraudulent in 2011 by the *British Medical Journal*. Several subsequent peer-reviewed studies have failed to show any association between the vaccine and autism [16].

The Centers for Disease Control and Prevention, the Institute of Medicine of the National Academy of Sciences, the UK National Health Service, and the Cochrane Library review have all concluded that there is no evidence of a link between the MMR vaccine and autism. In Japan, the MMR vaccination has been

discontinued, with single vaccines being used for each disease. Rates of autism diagnosis have continued to increase, showing no correlation with the change [17].

Some of us may be asked to provide some lifestyle changes/modifications for families with individuals with autism

Making lifestyle changes may help those individuals both at home and at school; such changes may include following a predictable schedule, maintaining a structured environment, being aware of unusual sensitivities, setting aside normal expectations and adopting entirely new rules, avoiding distractions, organizing tasks, using behavioral techniques, working with a behavioral therapist who can provide guidelines for the family, and believing that treatment may lead to improvements in language, social skills, and behavior.

Dual disabilities in autism

Families of individuals diagnosed with autism and a sight and/or a hearing impairment may feel even more isolated than those with another diagnosis. Service providers are sometimes uncertain about ways to coordinate and set priorities for an individual's multiple needs, and navigating the often bumpy road of dual diagnoses, seemingly endless screenings, and various educational options can be even more overwhelming.

Educational placement for children with autism

Fortunately, many children can receive services through early intervention programs in their home, and then move on to early childhood programs with specialized equipment in place, including enhanced acoustics and amplification choices, low vision lighting and magnification, as well as access to multisensory activities and mobility training. Some individuals can be served by itinerant teachers working to support classroom staff, as well as providing individual instruction.

Inclusion on a full-time or a part-time basis is increasing. There are, however, specific needs that must be fulfilled for a student with autism and a sight or a hearing disability. Instructors at school and in the home must remember that individuals experience variability in seeing or hearing levels, and their adaptation to wearing and using devices. This may be because of physical fatigue, as well as a function of less or compromised motor function, and not a behavioral choice.

Finally, when we are dealing with parents and caregivers, it is rather helpful to keep this message in mind

Message from a parent with autism

Dear Friend,

If you are reading this in your hands, you are likely beginning to walk down a path you never imagined you'd

walk. You may be afraid, confused, angry, and filled with grief. Other people in your world, even your family, may not fully understand the pain you are experiencing, unless they, too, have a child with autism. As the parent of a child with autism, I've been through all these emotions, and I will not lie, you will continue to go through them over and over again at varying degrees, and that is okay, it is normal. What is not okay is for you to feel alone or to need help and not receive it.

You will always need assistance for one thing or another. You are going to have questions about education, medical issues, about various treatment strategies. In addition, you will have questions about how 'the system' works in terms of assisting with your child's disability. Your questions will change, but you will always have questions. This, too, is okay. My advice to you is to prioritize your questions in the way that is in the best interest of your family right now. Your priorities may be different than another parent's, and your priorities will change and evolve. Even though you and I are both walking the path of autism, because our kids are unique, our situations are unique, and therefore, each of our needs will differ.

This journey can easily be overwhelming. Don't let it swallow you up. Take things one step at a time, and always look for someone to help you when you do feel overwhelmed.

Parent of a 10-year-old child with autism Autism awareness: beyond the individual

The most basic, yet most essential, step to being able to more effectively help those afflicted with ASD is to educate ourselves as well as the world around us. Fortunately, there are many programs that have been developed to help those who do not have ASD to better interact and communicate with those who do. Programs such as the Center for Autism and Related Disabilities (<http://www.albany.edu/psy/autism>) aim to provide evidence-based training and support to families and professionals on topics related to ASD [18].

The problem of awareness and lack of autism diagnostic teams is not just in Egypt. A survey conducted by the African Network for the Prevention and Protection against Child Abuse and Neglect (ANPPCAN) in 2007 showed a low to moderate level of knowledge of autism among the various categories of healthcare workers, with the highest level of awareness in healthcare workers of psychiatric facilities in the region [1].

We, believers in the rights of individuals with autism in Egypt, hope that one day soon, we will have similar autism awareness programs in Egypt and the Arab world. Each individual with autism or similar disabilities will be identified, accepted, and helped to navigate through the bumpy road of life.

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Conflicts of interest

There are no conflicts of interest.

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