

THE CLASSIC AUTISTIC DISORDER

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ABSTRACT: Autism is a brain disorder that affects a person's ability to communicate, form relationships with others, and respond appropriately to the external world. People with the condition often exhibit repetitive behavior or narrow, obsessive interests. Other characteristics of autism include problems with verbal and nonverbal communication and social interaction. Scientists aren't certain what cause the disorder, but it's likely that both genetics and environment play a role. These signs all begin before a child is three years old. Autism affects information processing in the brain by altering how nerve cells and their synapses connect and organize; how this occurs is not well understood. It is one of three recognized disorders in the autism spectrum (ASDs), the other two being Asperger syndrome, which lacks delays in cognitive development and language, and Pervasive Developmental Disorder-Not Otherwise Specified (commonly abbreviated as PDD-NOS), which is diagnosed when the full set of criteria for autism or Asperger syndrome are not met.

Keywords: Autism, autism spectrum, pdd-nos. asperger syndrome, CDC , ratt syndrome.

INTRODUCTION:

Autism has a strong genetic basis, although the genetics of autism are complex and it is unclear whether ASD is explained more by rare mutations, or by rare combinations of common genetic variants.^[1-5] In rare cases, autism is strongly associated with agents that cause birth defects.^[6] Controversies surround other proposed environmental causes, such as heavy metals, pesticides or childhood vaccines;^[7] the vaccine hypotheses are biologically implausible and lack convincing scientific evidence.^[8] The prevalence of autism is about 1–2 per 1,000 people worldwide; however, the Centers for Disease Control and Prevention (CDC) reports approximately 9 per 1,000 children in the United States are diagnosed with ASD. Autism (sometimes called "classical autism") is the most common condition in a group of disorders known as the autism spectrum disorders. Other autism spectrum disorders include: [a] Asperger syndrome [b] Rett syndrome [c] Childhood disintegrative disorder [d] Pervasive developmental disorder not otherwise specified (usually referred to as PDD-NOS).

CHARACTERISTIC BEHAVIORS OF AUTISM:

Autism is a highly variable neurodevelopmental disorder^[17] that first appears during infancy or childhood, and generally follows a steady course without remission.^[18] Overt symptoms gradually begin after the age of six months, become established by age two or three years. Autism is characterized by three distinctive behaviors. Autistic children:

Have difficulties with social interaction:- Social deficits distinguish autism and the related autism spectrum disorders (ASD) from other developmental disorders.^[20] People with autism have social impairments and often lack the intuition about others that many people take for granted.

Display problems with verbal and nonverbal communication: About a third to a half of individuals with autism do not develop enough natural speech to meet their daily communication needs.^[12] Differences in communication may be present from the first year of life, and may include delayed onset of babbling, unusual gestures, diminished responsiveness, and vocal patterns

Exhibit repetitive behaviors or narrow, obsessive interests: Autistic individuals display many forms of repetitive or restricted behavior, which the Repetitive Behavior Scale-Revised (RBS-R)^[19] categorizes as follows. **Stereotypy** is repetitive movement, such as hand flapping, making sounds, head rolling, or body rocking[FIGURE.4].

- ✓ **Compulsive behavior** is intended and appears to follow rules, such as arranging objects in stacks or lines.
- ✓ **Sameness** is resistance to change; for example, insisting that the furniture not be moved or refusing to be interrupted.
- ✓ **Ritualistic behavior** involves an unvarying pattern of daily activities, such as an unchanging menu or a dressing ritual. This is closely associated with sameness and an independent validation has suggested combining the two factors.^[08]
- ✓ **Restricted behavior** is limited in focus, interest, or activity, such as preoccupation with a single television program, toy, or game.
- ✓ **Self-injury** includes movements that injure or can injure the person, such as eye poking, skin picking, hand biting, and head banging.^[4] A 2007 study reported that self-injury at some point affected about 30% of children with ASD.^[20]

TYPES OF AUTISM:

Types of autism spectrum disorder include:-

- Asperger syndrome
- childhood disintegrative disorder
- Rett syndrome
- pervasive developmental disorder
- classical autism.

Characteristics of these types of autism include impaired social interaction and communication skills, and a limited range of activities and interests.

CAUSES OF AUTISM:

It has long been presumed that there is a common cause at the genetic, cognitive, and neural levels for autism's characteristic triad of symptoms.^[02] However, there is increasing suspicion

that autism is instead a complex disorder whose core aspects have distinct causes that often co-occur.^[09] [FIGURE:1] Deletion (1), duplication (2) and inversion (3) are all chromosome abnormalities that have been implicated in autism. Autism has a strong genetic basis, although the genetics of autism are complex and it is unclear whether ASD is explained more by rare mutations with major effects, or by rare multigene interactions of common genetic variants.^[5] Complexity arises due to interactions among multiple genes, the environment, and epigenetic factors which do not change DNA but are heritable and influence gene expression.^[20] Studies of twins suggest that heritability is 0.7 for autism and as high as 0.9 for ASD, and siblings of those with autism are about 25 times more likely to be autistic than the general population. However, most of the mutations that increase autism risk have not been identified. Typically, autism cannot be traced to a Mendelian (single-gene) mutation or to a single chromosome abnormality like fragile X syndrome, and none of the genetic syndromes associated with ASDs have been shown to selectively cause ASD.^[5] Numerous candidate genes have been located, with only small effects attributable to any particular gene.^[5] The large number of autistic individuals with unaffected family members may result from copy number variations—spontaneous deletions or duplications in genetic material during meiosis.^[15] Hence, a substantial fraction of autism cases may be traceable to genetic causes that are highly heritable but not inherited: that is, the mutation that causes the autism is not present in the parental genome.^[21] Several lines of evidence point to synaptic dysfunction as a cause of autism.^[3] Some rare mutations may lead to autism by disrupting some synaptic pathways, such as those involved with cell adhesion.^[18] Gene replacement studies in mice suggest that autistic symptoms are closely related to later developmental steps that depend on activity in synapses and on activity-dependent changes.^[12] All known teratogens (agents that cause birth defects) related to the risk of autism appear to act during the first eight weeks from conception, and though this does not exclude the possibility that autism can be initiated or affected later, it is strong evidence that autism arises very early in development.^[6] Although evidence for other environmental causes is anecdotal and has not been confirmed by reliable studies,^[7] extensive searches are underway.^[09] Environmental factors that have been claimed to contribute to or exacerbate autism, or may be important in future research, include certain foods, infectious disease, heavy metals, solvents, diesel exhaust, PCBs, phthalates and phenols used in plastic products, pesticides, brominated flame retardants, alcohol,

smoking, illicit drugs, vaccines,^[11] and prenatal stress although no links have been found, and some have been completely disproven. Parents may first become aware of autistic symptoms in their child around the time of a routine vaccination. This has led to unsupported theories blaming vaccine "overload", a vaccine preservative, or the MMR vaccine for causing autism.^[8] The latter theory was supported by a litigation-funded study that has since been shown to have been "an elaborate fraud". Although these theories lack convincing scientific evidence and are biologically implausible,^[8] parental concern about a potential vaccine link with autism has led to lower rates of childhood immunizations, outbreaks of previously controlled childhood diseases in some countries, and the preventable deaths of several children.^{[10][11]}

Mechanism: Autism's symptoms result from maturation-related changes in various systems of the brain. How autism occurs is not well understood. Its mechanism can be divided into two areas: the pathophysiology of brain structures and processes associated with autism, and the neuropsychological linkages between brain structures and behaviors.^[13] The behaviors appear to have multiple pathophysiologies.^[01]

Pathophysiology: [Figure:2] Autism affects the amygdala, cerebellum, and many other parts of the brain. Unlike many other brain disorders, such as Parkinson's, autism does not have a clear unifying mechanism at either the molecular, cellular, or systems level; it is not known whether autism is a few disorders caused by mutations converging on a few common molecular pathways, or is (like intellectual disability) a large set of disorders with diverse mechanisms.^[17] Autism appears to result from developmental factors that affect many or all functional brain systems, and to disturb the timing of brain development more than the final product. Neuroanatomical studies and the associations with teratogens strongly suggest that autism's mechanism includes alteration of brain development soon after conception.^[6] This anomaly appears to start a cascade of pathological events in the brain that are significantly influenced by environmental factors.^[14] Just after birth, the brains of autistic children tend to grow faster than usual, followed by normal or relatively slower growth in childhood. It is not known whether early overgrowth occurs in all autistic children. It seems to be most prominent in brain areas underlying the development of higher cognitive specialization.^[03] Hypotheses for the cellular and molecular bases of pathological early overgrowth include the following:

- An excess of neurons that causes local overconnectivity in key brain regions.^[01]

- Disturbed neuronal migration during early gestation.^{[02][03]}
- Unbalanced excitatory–inhibitory networks.^[04]
- Abnormal formation of synapses and dendritic spines,^[05] for example, by modulation of the neurexin–neuroligin cell-adhesion system,^[06] or by poorly regulated synthesis of synaptic proteins.^{[07][08]} Disrupted synaptic development may also contribute to epilepsy, which may explain why the two conditions are associated.^[09]

Interactions between the immune system and the nervous system begin early during the embryonic stage of life, and successful neurodevelopment depends on a balanced immune response. Aberrant immune activity during critical periods of neurodevelopment is possibly part of the mechanism of some forms of ASD.^[10] Although some abnormalities in the immune system have been found in specific subgroups of autistic individuals, it is not known whether these abnormalities are relevant to or secondary to autism's disease processes.^[11] As autoantibodies are found in conditions other than ASD, and are not always present in ASD,^[12] the relationship between immune disturbances and autism remains unclear and controversial.^[13] The relationship of neurochemicals to autism is not well understood; several have been investigated, with the most evidence for the role of serotonin and of genetic differences in its transport.^[3] Others have pointed to a role for group I metabotropic glutamate receptors (mGluR) in the pathogenesis of one type of autism, fragile X.^[07] Some data suggest an increase in several growth hormones; other data argue for diminished growth factors.^[15] Also, some inborn errors of metabolism are associated with autism, but probably account for less than 5% of cases.^[16] The mirror neuron system (MNS) theory of autism hypothesizes that distortion in the development of the MNS interferes with imitation and leads to autism's core features of social impairment and communication difficulties. The MNS operates when an animal performs an action or observes another animal perform the same action. The MNS may contribute to an individual's understanding of other people by enabling the modeling of their behavior via embodied simulation of their actions, intentions, and emotions.^[17] Several studies have tested this hypothesis by demonstrating structural abnormalities in MNS regions of individuals with ASD, delay in the activation in the core circuit for imitation in individuals with Asperger syndrome, and a correlation between reduced MNS activity and severity of the syndrome in children with ASD.^[18] However,

individuals with autism also have abnormal brain activation in many circuits outside the MNS^[19] and the MNS theory does not explain the normal performance of autistic children on imitation tasks that involve a goal or object^[20] [Figure:3] Autistic individuals tend to use different areas of the brain (yellow) for a movement task compared to a control group (blue). ASD-related patterns of low function and aberrant activation in the brain differ depending on whether the brain is doing social or nonsocial tasks. In autism there is evidence for reduced functional connectivity of the default network, a large-scale brain network involved in social and emotional processing, with intact connectivity of the task-positive network, used in sustained attention and goal-directed thinking. In people with autism the two networks are not negatively correlated in time, suggesting an imbalance in toggling between the two networks, possibly reflecting a disturbance of self-referential thought.^[21] A 2008 brain-imaging study found a specific pattern of signals in the cingulate cortex which differs in individuals with ASD. The underconnectivity theory of autism hypothesizes that autism is marked by underfunctioning high-level neural connections and synchronization, along with an excess of low-level processes. Evidence for this theory has been found in functional neuroimaging studies on autistic individuals and by a brainwave study that suggested that adults with ASD have local overconnectivity in the cortex and weak functional connections between the frontal lobe and the rest of the cortex.^[18] Other evidence suggests the underconnectivity is mainly within each hemisphere of the cortex and that autism is a disorder of the association cortex. From studies based on event-related potentials, transient changes to the brain's electrical activity in response to stimuli, there is considerable evidence for differences in autistic individuals with respect to attention, orientation to auditory and visual stimuli, novelty detection, language and face processing, and information storage; several studies have found a preference for nonsocial stimuli. For example, magnetoencephalography studies have found evidence in autistic children of delayed responses in the brain's processing of auditory signals. In the genetic area, relations have been found between autism and schizophrenia based on duplications and deletions of chromosomes; research showed that schizophrenia and autism are significantly more common in combination with 1q21.1 deletion syndrome. Research on autism/schizophrenia

relations for chromosome 15 (15q13.3), chromosome 16 (16p13.1) and chromosome 17 (17p12) are inconclusive.^[20]

Neuropsychology: Two major categories of cognitive theories have been proposed about the links between autistic brains and behavior. The first category focuses on deficits in social cognition. The empathizing–systemizing theory postulates that autistic individuals can systemize—that is, they can develop internal rules of operation to handle events inside the brain—but are less effective at empathizing by handling events generated by other agents. An extension, the extreme male brain theory, hypothesizes that autism is an extreme case of the male brain, defined psychometrically as individuals in whom systemizing is better than empathizing; this extension is controversial, as many studies contradict the idea that baby boys and girls respond differently to people and objects. These theories are somewhat related to the earlier theory of mind approach, which hypothesizes that autistic behavior arises from an inability to ascribe mental states to oneself and others. The theory of mind hypothesis is supported by autistic children's atypical responses to the Sally–Anne test for reasoning about others' motivations, and the mirror neuron system theory of autism described in *Pathophysiology* maps well to the hypothesis. However, most studies have found no evidence of impairment in autistic individuals' ability to understand other people's basic intentions or goals; instead, data suggests that impairments are found in understanding more complex social emotions or in considering others' viewpoints. The second category focuses on nonsocial or general processing. Executive dysfunction hypothesizes that autistic behavior results in part from deficits in working memory, planning, inhibition, and other forms of executive function. Tests of core executive processes such as eye movement tasks indicate improvement from late childhood to adolescence, but performance never reaches typical adult levels.^[07] A strength of the theory is predicting stereotyped behavior and narrow interests;^[08] two weaknesses are that executive function is hard to measure and that executive function deficits have not been found in young autistic children.^[02] Weak central coherence theory hypothesizes that a limited ability to see the big picture underlies the central disturbance in autism. One strength of this theory is predicting special talents and peaks in performance in autistic people.^[03] A related theory—enhanced perceptual functioning—focuses more on the superiority of locally oriented and perceptual operations in autistic

individuals. These theories map well from the underconnectivity theory of autism. Neither category is satisfactory on its own; social cognition theories poorly address autism's rigid and repetitive behaviors, while the nonsocial theories have difficulty explaining social impairment and communication difficulties.^[05] A combined theory based on multiple deficits may prove to be more useful.

EARLY SIGNS OF AUTISM:

Preoccupation with certain objects or subjects, inflexible adherence to specific routines or rituals, and impaired ability to make friends with peers may be early autism signs. Other indications include absence or impairment of imaginative and social play and an impaired ability to initiate or sustain a conversation with others. Because these early signs can vary in severity and symptoms, they may go unrecognized^[4].

Introduction:

Autism varies widely in its severity and symptoms. Because of this, early signs may go unrecognized, especially in mildly affected children or when it is masked by more debilitating handicaps.

Possible Early Autism Signs: Doctors rely on a core group of early signs to alert them to the possibility of a diagnosis of autism.

These early signs of autism can include:

- Impaired ability to initiate or sustain a conversation with others
- Impaired ability to make friends with peers
- Inflexible adherence to specific routines or rituals
- Absence or impairment of imaginative and social play
- Stereotyped, repetitive, or unusual use of language
- Restricted patterns of interest that are abnormal in intensity or focus
- Preoccupation with certain objects or subjects.

AUTISM SYMPTOMS:

Distinctive autism signs and symptoms include difficulties with social interaction, problems with communication, and repetitive behaviors. A baby with symptoms may be unresponsive to people

or focus intently on one item to the exclusion of others for long periods of time. Symptoms may include engaging in repetitive movements, such as rocking and twirling, or in self-abusive behavior, such as biting or head-banging^[10].

Autism Symptoms:

There are three distinctive symptoms of autism:

- Difficulties with social interaction
- Problems with verbal and nonverbal communication
- Repetitive behaviors or narrow, obsessive interests.

Autistic children can also develop symptoms that include reduced sensitivity to pain but increased sensitivity to sound, touch, or other sensory stimulation. Symptoms can range from mild to disabling.

Social Interaction

The hallmark symptom of autism is impaired social interaction. Parents are usually the first to notice possibly symptoms in their child. As early as infancy, a baby with autism symptoms may be unresponsive to people or focus intently on one item to the exclusion of others for long periods of time. A child with autism may appear to develop normally and then withdraw and become indifferent to social engagement^[3].

Verbal and Nonverbal Communication

The second most common symptom of autism is problems with verbal and nonverbal communication.

Children with autism may fail to respond to their name and often avoid eye contact with other people. They have difficulty interpreting what others are thinking or feeling because they can't understand social cues, such as tone of voice or facial expressions, and don't watch other people's faces for clues about appropriate behavior. They lack empathy

Repetitive Behaviors or Narrow, Obsessive Interests

Many children with symptoms of autism engage in repetitive movements, such as rocking and twirling, or in self-abusive behavior, such as biting or head-banging. They also tend to start speaking later than other children and may refer to themselves by name instead of "I" or "me."

Children with autism don't know how to play interactively with other children. Some speak in a sing-song voice about a narrow range of favorite topics, with little regard for the interests of the person to whom they are speaking.

Sensitivity

Many children with autism have a reduced sensitivity to pain, but are abnormally sensitive to sound, touch, or other sensory stimulation. These unusual reactions may contribute to behavioral symptoms, such as a resistance to being cuddled or hugged.

Other Medical Conditions

Children with autism symptoms appear to have a higher-than-normal risk for certain coexisting conditions, including:

- Fragile X syndrome (which causes mental retardation)^[6]
- Tuberous sclerosis (in which tumors grow on the brain)
- Epileptic seizures
- Tourette syndrome
- Learning disabilities
- Attention deficit disorder (ADD).

For reasons that are still unclear, about 20 to 30 percent of children with autism develop epilepsy by the time they reach adulthood. While people with schizophrenia may show some autistic-like behavior, their symptoms usually do not appear until the late teens or early adulthood. Most people with schizophrenia also have hallucinations and delusions, which are not found in autism

Progression of Autism Symptoms

For many children, symptoms of autism improve with treatment and with age. Some children with the condition grow up to lead normal or near-normal lives. Children whose language skills regress early in life, usually before the age of three, appear to be at risk of developing epilepsy or seizure-like brain activity. During adolescence, some children with autism may become depressed or experience behavioral problems. Parents of these children should be ready to adjust treatment for their child as needed.

DIAGNOSIS OF AUTISM:

It is not always easy to make an autism diagnosis^[11-16], and the disorder may go unrecognized, especially in mildly affected children or when it is masked by other conditions. Because of these difficulties, it is best to have a child evaluated by a multidisciplinary team of medical professionals experienced in diagnosing this disorder. Doctors rely on a core group of behaviors that are characteristic of this condition, such as the impaired ability to initiate or sustain a conversation with others.

Behaviors That Could Indicate Autism

Doctors rely on a core group of behaviors when making an autism diagnosis. These behaviors include:

- Impaired ability to make friends with peers
- Impaired ability to initiate or sustain a conversation with others
- Absence or impairment of imaginative and social play
- Stereotyped, repetitive, or unusual use of language
- Restricted patterns of interest that are abnormal in intensity or focus
- Preoccupation with certain objects or subjects
- Inflexible adherence to specific routines or rituals.

Doctors will often use a questionnaire or other screening instrument to gather information about a child's development and behavior. Some screening instruments rely solely on parent observations; others rely on a combination of parent and doctor observations. If screening instruments indicate the possibility of autism, doctors will ask for a more comprehensive evaluation.

A Team Approach to Making a Diagnosis

Autism is a complex disorder. A comprehensive evaluation requires a multidisciplinary team including a psychologist, neurologist, psychiatrist, speech therapist, and other professionals experienced in diagnosing autism. The team members will conduct a thorough neurological assessment and in-depth cognitive and language testing.

Because hearing problems can cause behaviors that could be mistaken for autism, children with delayed speech development should also have their hearing tested. After a thorough evaluation, the team usually meets with parents to explain the results of the evaluation and present the diagnosis.

Diagnosing Autism Spectrum Disorders

Children with some symptoms of autism, but not enough to be diagnosed with classical autism, are often diagnosed with PDD-NOS. Those children who exhibit autistic behaviors but well-developed language skills are often diagnosed with Asperger syndrome. Children who develop normally and then suddenly deteriorate between the ages of 3 to 10 years and show marked autistic behaviors may be diagnosed with childhood disintegrative disorder. Girls with autistic symptoms may be suffering from Rett syndrome, a sex-linked genetic disorder characterized by social withdrawal, regressed language skills, and hand wringing.

PROGNOSIS:

For many children, symptoms improve with treatment and with age. Some children with autism grow up to lead normal or near-normal lives. Children whose language skills regress early in life, usually before the age of 3, appear to be at risk of developing epilepsy or seizure-like brain activity.

During adolescence, some children with autism may become depressed or experience behavioral problems. Parents of these children should be ready to adjust treatment for their child as needed.

TREATMENT OF AUTISM:

It is important for autism treatment to be started once a child's disability has been identified. Applied behavior analysis has become a widely accepted as an effective treatment for this condition. Before a parent makes a decision about their child's treatment, they should learn as much as they can about resources and programs available in their area.

Applied Behavior Analysis:

Among the many methods available for treating autism and education of people with autism, applied behavior analysis (ABA)^[8-10] has become widely accepted as an effective treatment. Applied behavioral methods have been shown to reduce inappropriate behavior and increase communication, learning, and appropriate social behavior. The basic research done by Ivar Lovaas and his colleagues at the University of California, Los Angeles, calling for an intensive, one-on-one child-teacher interaction for 40 hours a week, laid a foundation for other educators and researchers in the search for further effective early interventions to help those with ASD

attain their potential. The goal of behavioral management is to reinforce desirable behaviors and reduce undesirable ones.

Goals of Autism Treatment

An effective treatment program will:

- Offer a predictable schedule
- Build on the child's interests
- Teach tasks as a series of simple steps
- Actively engage the child's attention in highly structured activities
- Provide regular reinforcement of behavior.

Medications as Treatment for Autism:

Autism treatment can also involve medications to treat specific symptoms. For example, doctors often prescribe an antidepressant medication to handle symptoms of anxiety, depression, or obsessive-compulsive disorder. Antipsychotic medications are used to treat severe behavioral problems. Seizures can be treated with one or more of the anticonvulsant drugs. Stimulant drugs, such as those used for children with attention deficit disorder (ADD), are sometimes used effectively to help decrease impulsivity and hyperactivity

Alternative Therapy:

- Dietary Interventions
- Dietary interventions are based on the idea that:
 - ✓ An insufficiency of a specific vitamin or mineral may cause some autistic symptoms
 - ✓ Food allergies cause symptoms of autism.
 - ✓ If parents decide to try for a given period of time a special diet, they should be sure that the child's nutritional status is measured carefully.

Autism Medications:

In many cases, medications are used to treat behavioral problems that keep people with autism from functioning more effectively at home or school. Doctors often prescribe these products "off label," which means that they have not been officially approved by the Food and Drug Administration (FDA) for use in children. Parents should ask their child's doctor about any side effects the medications may have. The "autism medications" used are those that have been developed to treat similar symptoms in other disorders. Many of these medications are

prescribed "off-label." This means they have not been officially approved by the FDA for use in children, but the doctor prescribes the medications if he or she feels they are appropriate for your child.

Ask the doctor about any side effects the medication may have and keep a record of how your child responds to the medication. It will be helpful to read the "patient insert" that comes with your child's medication. Some people keep the patient inserts in a small notebook to be used as a reference. This is most useful when several medications are prescribed for autism.

Autism Medications: Anxiety and Depression

Selective serotonin reuptake inhibitors (SSRIs) are the medications most often prescribed for symptoms of anxiety, depression, and/or obsessive-compulsive disorder (OCD). Only one of the SSRIs, fluoxetine, (Prozac[®]) has been approved by the FDA for both OCD and depression in children age 7 and older. Three that have been approved for OCD are:

- Fluvoxamine (Luvox[®]) -- age 8 and older
- Sertraline (Zoloft[®]) -- age 6 and older
- Clomipramine (Anafranil[®]) -- age 10 and older.

Autism treatment with these medications can be associated with decreased frequency of repetitive, ritualistic behavior and improvements in eye contact and social contacts.

The FDA is studying and analyzing data to better understand how to use the SSRIs safely, effectively, and at the lowest dose possible.

Treating Behavioral Problems

Antipsychotic medications have been used to treat severe behavioral problems in people with autism. These medications work by reducing the activity in the brain of the neurotransmitter dopamine. Among the older, typical antipsychotics, such as haloperidol (Haldol[®]), thioridazine, fluphenazine, and chlorpromazine, haloperidol was found in more than one study to be more effective than a placebo in treating serious behavioral problems.

Using Autism Medicine to Treat Seizures

Seizures occur in one in four people with autism, most often in those who have low IQ or are mute. They are treated with one or more anticonvulsants. These include such medications as:

- Carbamazepine (Tegretol[®])
- Lamotrigine (Lamictal[®])

- Topiramate (Topamax[®])
- Valproic acid (Depakote[®]).

Autism Drugs for Inattention and Hyperactivity

Stimulant medications such as methylphenidate (Ritalin[®]), used safely and effectively in people with attention deficit hyperactivity disorder (ADHD), have also been prescribed for children with autism. These products may decrease impulsivity and hyperactivity in some children, especially those higher functioning children. Some of the benzodiazepines such as diazepam (Valium[®]) and lorazepam (Ativan[®]) are used.

Autism Speech Language Therapy

The goal of speech language therapy for autism should be to improve useful communication. No one treatment, including this type of therapy, has been found to successfully improve communication in all individuals who have autism. For some children, verbal communication is a realistic goal of language therapy.

- Begins early (during the preschool years).
- Is individually tailored.
- Targets both behavior and communication.
- Involves parents or primary caregivers.

CONCLUSION:

Although it is clear that more children than ever before are being classified as having autism, it is unclear how much of this increase is due to changes in how we identify and classify autism in people, or whether this is due to a true increase in occurrence. However, using our current standards, the autism spectrum disorders are the second most common serious developmental disability after mental retardation/intellectual impairment, but are still less common than other conditions that affect children's development, such as speech and language impairments, learning disabilities, and ADHD. The impact of having a developmental disability is immense for the families affected and for the community services that provide intervention and support for these families. It is important that we treat common developmental disabilities as conditions of urgent public health concern, do all we can to identify children's learning needs, and begin intervention as early as possible to enable all children to reach their full potential.

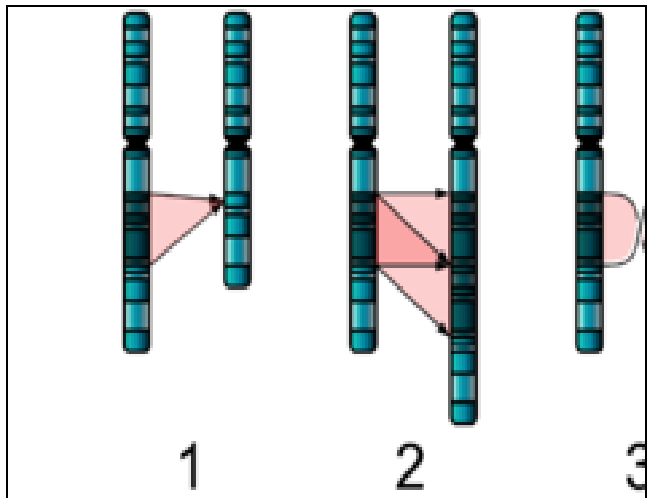


Figure 1: Deletion (1), duplication (2) and inversion (3) are all chromosome abnormalities that have been implicated in autism.

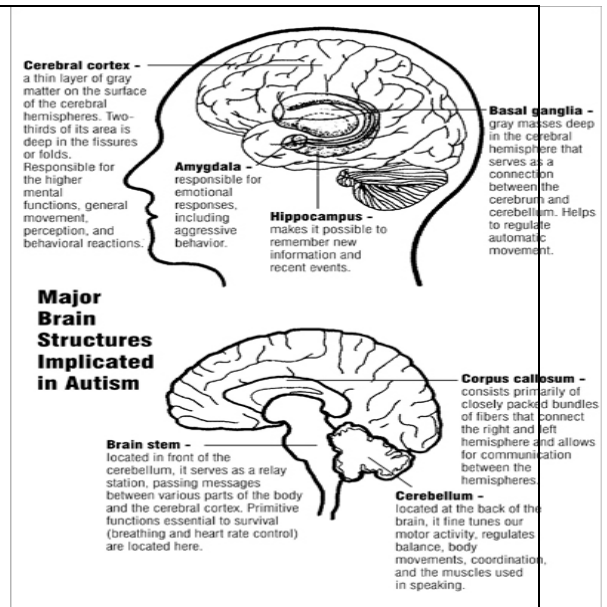


Figure.2: Autism affects the amygdala, cerebellum, and many other parts of the brain

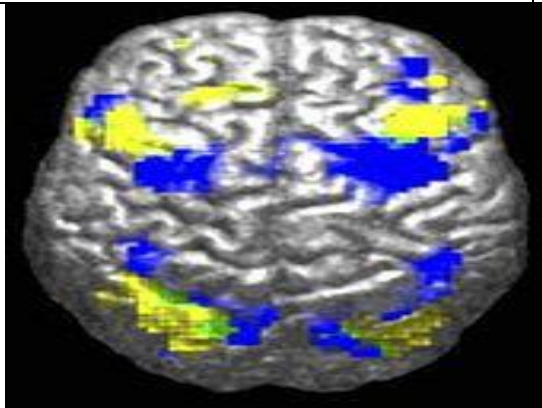


Figure 3:Autistic individuals tend to use different areas of the brain (yellow) for a movement task compared to a control group (blue)



Figure 4: A young boy with autism, and the precise line of toys he made

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