



AUTISM

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Dental Treatment of Geriatrics and
Special Patients

Objectives

- DH caring for people with autism must be familiar with the manifestations of the disease and its associated features.
- DH can garner the maximum level of patient cooperation.
- DH must be familiar with the medications used to treat the associated features of the disorder because many of them cause untoward orofacial and systemic reactions and may precipitate adverse interactions with dental therapeutic agents.


Facts and Statistics

- 1 in 150 births¹
- 1 to 1.5 million Americans
- Fastest-growing developmental disability
- 10 - 17 % annual growth
- \$90 billion annual cost
- 90% of costs are in adult services
- Cost of lifelong care can be reduced by 2/3 with early diagnosis and intervention
- In 10 years, the annual cost will be \$200-400 billion

In February 2007, the Centers for Disease Control and Prevention issued their ADDME autism prevalence report


That the prevalence of autism had risen to 1 in every 150 American children, and almost 1 in 94 boys.

Autism



- Is a severely incapacitating life-long developmental disability which typically appears during the first three years of life.
- It occurs in approximately five out of every 10,000 births and
- Is four times more common in boys than girls.
- It has been found throughout the world in families of all racial, ethnic, and social backgrounds.

Autism



- Lack of or delay in spoken language
- Repetitive use of language and/or motor mannerisms (e.g. hand-flapping, twirling objects)
- Little or no eye contact
- Lack of interest in peer relationships
- Lack of spontaneous or make-believe play
- Persistent fixation on parts of objects


Essentials of Diagnosis & Typical Features

Qualitative impairments in communication

Qualitative impairments in reciprocal social interaction

Presence of stereotypic, restrictive, and repetitive patterns of behavior, interests, and activities.

AS likely to spin, repetitively rotate, stare at and look out of the corners of their eyes at simple objects, including a baby bottle and a rattle, as early as 12 months of age.



Diagnose and treat autism earlier, reducing some of the social and educational challenges linked to the disorder.

There is an urgent need to develop measures that can pick up early signs of autism, signs present before 24 months

According to the National Research Council:

- "A substantial subset of children with autistic spectrum disorders are able to make marked progress during the period that they receive intensive early intervention, and nearly all children with autistic spectrum disorders appear to show some benefit.
- Children with ASD who begin treatment before age 3 to 3½ years make the greatest gains with intervention."
- As with any child, treatment should be based on the individual needs of the child.

Chapter 2. Child Development & Behavior E. Goldson, A Reynolds

Autism

- Autism occurs by itself or in association with other disorders which affect the function of the brain such as viral infections, metabolic disturbances, and epilepsy.
- On IQ testing, approximately 60 percent have scores below 50, 20 percent between 50 and 70, and only 20 percent greater than 70.
- Autistic people live a normal life span

E Ritvo, BJ Freeman , 1977

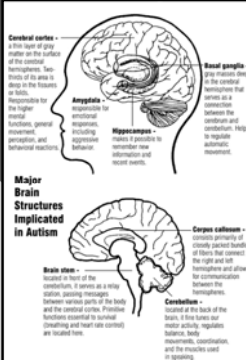
SEVERITY OF MR (INTELLIGENCE QUOTIENT RANGE)	PREVALENCE OF SEVERITY AMONG YOUTH WITH MR (%)	DEGREE OF INTELLECTUAL FUNCTION	ACADEMIC SKILL LEVEL	DEGREE OF ADAPTIVE FUNCTION
Mild (IQ 55-70)	05	Develops social and communication skills during preschool years; low functional impairment in necessary motor areas	Third grade	Can achieve social and functional skills adequate for minimum self-support; can live independently in a supervised setting
Moderate (IQ 40-55)	10	Acquires communication skills during early childhood; may learn to walk during early school years; some functional learning	Second grade	May have difficulties negotiating social situations, which may interfere with peer relationships; can perform skilled or semi-skilled work, with supervision; can live in a supervised setting
Severe (IQ 25-40)	3-4	It is unable to acquire communication skills; during early childhood, may learn to walk during school-age period; can be trained in elementary self-care skills	May learn the alphabet and simple counting	May be able to perform simple tasks in a closely supervised setting; can communicate by group behavior or with their families
Profound (IQ < 25)	1-2	Usually does not develop neurological conditions; usually fails to develop early functional adaptive skills; usually institutionalized in some form of developmental center; may learn self-care	Motor development, self-care and communication skills are observed	Requires close supervision and is observed setting

* MR: Mental retardation.
† IQ: Intelligence quotient.

Friedlander et al., JADA, Vol. 137 http://jada.ada.org November 2006

Major Brain Structures Implicated in Autism

- Cerebral Cortex
- Amigdala
- Hippocampus
- Basal Ganglia
- Brain Stem
- Cerebellum
- Corpus Callosum



Cerebral cortex - is the layer of gray matter on the surface of the cerebral hemispheres. Two-thirds of the area is gray in the fetus or in the infant. Responsible for the higher intellectual, general, emotional, and behavioral reactions.

Amigdala - responsible for emotional responses, including aggression, aggression, and behavioral reactions.

Hippocampus - makes it possible to remember new information and recent events.

Basal ganglia - gray masses found in the cerebral hemisphere that control all movements, including the cerebrum and cerebellum. Help regulate automatic movements.

Brain stem - located in front of the cerebellum. It serves as a relay station, passing messages between various parts of the brain and the cerebral cortex. Functions include essential for breathing and heart rate control.

Corpus callosum - consists of a bundle of fibers that connect the right and left hemispheres and allow for communication between the hemispheres.

Cerebellum - located at the back of the brain. It fine-tunes and motor activity, regulates balance, coordination, and the muscle used in speaking.

There are no medical tests for diagnosing autism

Observation of the individual's communication

Behavior and developmental levels


Mental retardation
Behavior disorder
Hearing problems
Odd and eccentric behavior

There is no known single cause for autism

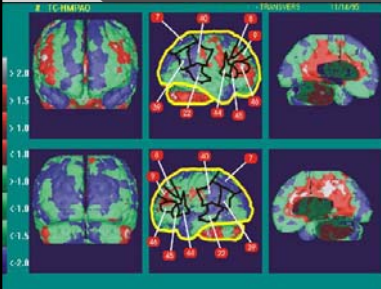
Brain scans show differences in the shape and structure of the brain in children with autism versus neuro-typical children

Link between heredity, genetics and medical problems.


Is generally accepted that it is caused by abnormalities in brain structure or function



NeuroSPECT scans are becoming extremely informative, as they show blood flow through areas of the brain. Blood flow implies function / activity (24)(25). As noted, the autistic children have presented consistently with a decrease in blood flow in the temporal area, various degrees of hypoperfusion in the parietal / occipital area and the cerebellum vessels. There has often been an increase of blood flow in the frontal lobes which is consistent with ADD on the hyperactivity end

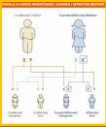


Autism Checklist




Cause

- A cluster of unstable genes may interfere with brain development
- Still other researchers are investigating problems during pregnancy or delivery
- Environmental factors, such as **viral infections, metabolic imbalances, and exposure to environmental chemicals.**



Genetic Vulnerability

- Autism tends to occur more frequently than expected among individuals who have certain medical conditions
 - > Fragile X syndrome
 - > tuberous sclerosis
 - > congenital rubella syndrome
 - > untreated phenylketonuria (PKU).
 - > Some harmful substances ingested during pregnancy also have been associated with an increased risk of autism.



Environmental Factors

- Research indicates that other factors besides the genetic component are contributing to the rise in increasing occurrences of ASD.
- such as environmental toxins (e.g., heavy metals such as mercury), which are more prevalent in our current environment than in the past.
- Those with ASD (or those who are at risk) may be especially vulnerable, as their **ability to metabolize and detoxify** these exposures can be compromised

Symptomatology

- Occasionally with autism there are certain symptoms that become defining of the individual as he/she ages.
- It is critical not to confuse the evolving, defining symptom as primary in nature, but rather secondary to the syndrome of autism itself.
- Those symptomatologyes are
 - > obsessive /compulsive disorder
 - > bipolar disorder
 - > depression
 - > anxiety disorder
 - > epilepsy
 - > attention-deficit/hyperactivity disorder.(ex cornelia de lange syndrome tourette's syndrome)

Asperger Syndrome

- Difficulty understanding others' feelings.
- Pedantic, formal style of speaking; often called "little professor," verbose.
- Extreme difficulty reading and/or interpreting social cues.
- Socially and emotionally inappropriate responses.
- Literal interpretation of language. difficulty comprehending implied meanings.
- Extensive vocabulary. Reading commences at an early age (hyperlexia).
- Stereotyped or repetitive motor mannerisms.
- Difficulty with "give and take" of conversation.

Management

- Although the medical problems may not be unusual, interactions with autistic children may be difficult secondary to sensory defensiveness, unusual social behaviors, and potentially aggressive self-protective responses to medical procedures and examinations.
- Parents and primary care givers can inform the dentist DH of the most effective means of communication for each patient.
- Judicious use of sedation for painful or difficult procedures should be employed with specific attention to patient safety and potential medication interactions.

Tintinalli's Emergency Medicine: A Comprehensive Study Guide, 6th Edition
Chapter 138. Evaluating the child with Special Health Care Needs. D.R Trocinski, D. Moro-Sutherland.

Management

Increased dental caries

Increased gingival and periodontal disease



DENTAL TREATMENT OF PATIENTS WITH AUTISM

- Patients with autism will exhibit wide variation in their level of understanding and ability to cooperate during dental treatment.
- A preliminary office visit to assess their capabilities, obtain a medical history and gauge the extent of dental disease should be arranged.
- It is best to conduct the first two components of this analysis in the dentist's private office rather than in the operator, because the dental examination light and the noise of a dental engine (even if in another operator) may be stressful for people with autism who have visual and auditory hypersensitivity.
- Children with autism also generally dislike being touched.
- Patients' medical histories can offer many valuable clues to help successfully manage their dental



DENTAL TREATMENT OF PATIENTS WITH AUTISM

- May be able to cooperate during treatment when local anesthesia and, when necessary, nitrous oxide-oxygen sedation are used.
- The presence of parents or aides in the operatory is helpful and appears to comfort the patients and augment cooperation.
- Compliance is further enhanced by use of the tell-show-do technique.
- Give short, clear commands and positive and negative verbal reinforcement.
- Use of a dental mouth prop to help patients keep their mouths open is helpful.
- Use of "hand over mouth" and restraints such as a "papoose board" is controversial.

TABLE 2
Drugs used to treat autism and their adverse systemic side effects and interactions with dental therapeutics.

DRUG	COMMON USES	REACTIONS	SIDE EFFECTS AND INTERACTIONS
Carbamazepine	Anticonvulsant	Mild sedation, vertigo, ataxia, nystagmus, diplopia	Long-term use associated with decreased white blood cell and platelet counts; hepatotoxicity, leukopenia, and neutropenia may reduce the metabolism of propofol and general anesthesia of the oral cavity; monitor the metabolism of propofol
Clonidine	Antihypertensive	Clonus hyperreflexia, reducing hyperactivity	Increases CYP2D6 dependent of other CYP2D6 dependent drugs; may cause orthostatic hypotension
Fluoxetine	Antidepressant	Reducing aggression, clonus, reducing weight gain, depression, anorexia, vomiting, diarrhea, constipation, loss of appetite, preventing self-mutilation	Side effects include diarrhea, nausea, constipation, dizziness and sexual dysfunction, commonly occur in children in 14-day time; increases CYP2D6 dependent of other CYP2D6 dependent drugs; may reduce the metabolism of valproic acid therefore the analgesic effect and cause thrombocytopenia; may reduce the metabolism of benzocaine
Methylphenidate	CNS stimulant	Clonus hyperreflexia, reducing attention	May cause acute thrombocytopenia; may cause orthostatic hypotension; may reduce some diuretic reabsorption, etc.
Risperidone	Antipsychotic	Stiffing of abdomen, rigidity of body	Increases CYP2D6 dependent of other CYP2D6 dependent drugs; may cause orthostatic hypotension; may reduce some diuretic reabsorption, etc.
Risperidone	Antipsychotic	Antipsychotic, reducing aggression, reducing attention, rigidity of abdomen, rigidity of body	May cause acute thrombocytopenia; may cause orthostatic hypotension; may reduce some diuretic reabsorption, etc.
Sertraline	Antidepressant	Reducing aggression, clonus, reducing weight gain, depression, anorexia, vomiting, diarrhea, constipation, loss of appetite, preventing self-mutilation	Side effects include diarrhea, nausea, constipation, dizziness and sexual dysfunction, commonly occur in children in 14-day time; increases CYP2D6 dependent of other CYP2D6 dependent drugs; may reduce the metabolism of valproic acid; therefore, the analgesic effect and cause thrombocytopenia; may reduce the metabolism of benzocaine
Valproic Acid	Anticonvulsant	Mild sedation, ataxia, nystagmus, diplopia	May cause leukopenia, thrombocytopenia and decreased platelet counts; may cause liver failure; may cause orthostatic hypotension; may reduce the metabolism of propofol and general anesthesia of the oral cavity; monitor the metabolism of propofol

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TABLE 3
Adverse orofacial reactions to drugs used to treat autism.

DRUG	REACTIONS					
	Xerostomia	Stomatitis	Dysphagia	Stomatitis	Dysphagia	Stomatitis
Carbamazepine	++	0*	0	0	0	+
Clonidine	+	0	+	+	0	0
Fluoxetine	+	0	+	+	+	+
Methylphenidate	+	0	0	0	0	0
Risperidone	+	0	0	0	0	0
Risperidone	+	+	+	0	0	+
Sertraline	+	0	+	+	+	+
Valproic Acid	+	0	0	0	+	0

* = 75%¹, 0%², 0%³
 † = 100%¹ incidence of tongue/cheek/mandibular/lingual lesions
 ‡ = 100%¹ incidence of tongue/cheek/mandibular/lingual lesions, face, mouth and jaw as an exaggerated effect

Friedlander et al. JADA, Vol. 137 http://jada.ada.org November 2006

www.aspenj.org
www.autism.fm
www.quackwatch.com