Research Article

A Retrospective Descriptive Study on Oral and Dental Diseases in Patients with Autism Spectrum Disorder

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Abstract

Review: Autism is a neurodevelopmental disorder that affects communication, social and behavioral interaction. These patients may present unsatisfactory oral health such as: high biofilm indexes (plaque), high prevalence of periodontal diseases and oral self-mutilation.

Goal: To evaluate the oral condition of patients diagnosed with ASD and to verify the possible correlation of odontological disease with behavioral alterations.

Casuistry and Method: Medical and dental records of patients with diagnosis of Autistic Spectrum Disorder (ASD) of both sexes from 150 patients referred to the dental team of the Institute of Psychiatry of the Hospital das Clínicas, Medical School, University of São Paulo. The following were evaluated: reasons for medical referral, main complaint, age group, gender, CPO-D and ceo-d, diagnosis and dental treatment.

Results: There were 4 males (n = 114; 76%) for one woman (n = 36; 24%); (n = 30; 20%) of the patients had a behavior change, which reached (n = 40; 26.6%) according to the caregivers; oral-dental diseases: dental caries, (n = 80, 53.3%); gingivitis, (n = 59, 39.3%). The mean DMFT index increased with age (8-11 years = 3.73, 12-14 years = 1.88, 15-21 years = 2.91, 22-28 years = 4.64 and 29-35 years' years = 5). They received outpatient dental treatment without sedation, n = 61, (40.6%); with sedation, n = 47, (31.6%) and under general anesthesia at the surgical center, n = 39, (26%).

Conclusion: The prevalence according to the gender of ASD in the HCFMUSP Ipq Dentistry Team was 4x1 men. About a quarter of the patients were referred by the doctor because of behavior change; as oral diseases can cause pain, this relationship should be evaluated in future studies. Prevention remains important, not only because of the need for dental treatment, but also to reduce hospitalizations and general anesthesia.

Keywords: Autism; Oral Health; Orofacial Pain

Introduction

Autism is a neurodevelopmental disorder that affects communication, social and behavioral interaction and its symptoms can be detected from early childhood 1 [1]. The origin of Autistic Spectrum Disorder (ASD) is multifactorial, which makes it necessary to understand the genetic, familial, social and emotional profile in which the individual is inserted [1,2]. The prevalence of ASD is 1 for every 68 children, it is estimated that the proportion is four boys for each girl, the female gender tend to be more severely affected than for the male sex [3,4]. In Brazil, there is a preliminary study where the prevalence was 27.2 per 10,000 children [5]. The ASD can be represented by a straight

line that classifies the highly functioning individuals (Asperger's syndrome), with high, moderate and low functioning (more severe patients). All individuals within this spectrum are autistic. What classifies them in the levels of functionality are IQ and cognitive abilities [1,2]. All autistics demonstrate failures in the areas of communication, social interaction, imagination and repertoire of behaviors. The diagnosis is essentially clinical, made through the contact with the patient and his / her family, complementary evaluations such as: cognitive, psychopedagogical and speech-language evaluation, besides medical examinations can be made to better understand the clinical picture of the patient [6].

Individuals with special needs such as mental deficiency and ASD may present unsatisfactory oral health such as: high plaque indexes, high prevalence of periodontal diseases and self-mutilation oral. These oral alterations impact on quality of life and well-being, not only physical, but also social and psychological [7,8,9]. The pharmacological management of ASD patients usually includes drugs used to treat mood disorders, attention deficit, aggression, anxiety and insomnia, which alter the salivary flow contributing to the increased risk of caries [10]. The specialized dental services for ASD care offer barriers to access and the lack of professionals with skills to care for patients with ASD were the most frequent reasons cited by caregivers and relatives [11,12].

Due to the high prevalence of untreated oral diseases and the difficulty of communication, patients may report pain and cannot communicate clearly to their caregivers, having a sudden behavioral change that may cause difficulties in the treatment of the disease and in the control itself with psychotropic drugs [13,14]. Therefore, this study aimed to characterize the oral condition of patients diagnosed with ASD and also to verify possible correlation of odontological disease with behavioral alterations.

Materials and Methods

A retrospective descriptive study of the medical records of patients diagnosed with ASD at the Ambulatory and Outpatient Psychiatry Services of the Institute of Psychiatry, Hospital das Clínicas, University of São Paulo Medical School (IPq). A total of 150 patients were included, 114 (76%) of the male gender and 36 (24%) of the female diagnosed with ASD ICD-10 (F84.0) who were attended in the period between 2007 and 2013, whose age was equal to or greater than two years.

The following aspects were evaluated:

- Age group and gender.
- Reason for referral by psychiatrists for dental consultation.
- Main patient complaint.
- CPO-D and ceo-d (WHO, 1997).
- Dental diagnosis.

- Dental treatment.

Results

The gender ratio was 4: 1 for the male. The patients' ages ranged from two to thirty-two years, with a mean of 16.37 (table 1).

Age group	Number of patients (%)	Male gender (%)	Female gender (%)
< 7 years	19 (12,6%)	15 (13,15%)	04 (11,11%)
8 a 14 years	44 (29,3)	36 (31,57%)	08 (22,22%)
15 a 21 years	44 (29,3%)	28 (24,56%)	16 (44,44%)
22 a 28 years	28 (18,6%)	22 (19,29%)	06 (16,66%)
> 28 years	15 (10%)	13 (11,40%)	02 (5,55%)
Total	**150 (100%)**	**114 (100%)**	**36 (100%)**

Table 1: Distribution of patients according to age group and gender - HCFMUSP - 2007-2013. Source: *Dentistry team of The Institute of Psychiatry of the Hospital das Clínicas, Faculty of Medicine, University of São Paulo.*

Regarding the reason for medical referral, 82 patients (54.6%) were referred for routine consultation, 30 (20%) to assess the presence of dental or oral pain that could justify the patient's behavior change, 17 (11.3%) by others reasons, and records 16 (10.6%) did not include the reason for referral and 5 (3.3%) due to dental caries (table 2).

Routing reason	NNumber of ppatients	%
Routine Consultation	82	54,6%
Behavior change	30	20%
Other reasons (tooth extraction, does not allow brushing, foul smell, tooth disalignment, difficulty feeding, supernumerary tooth, gingival bleeding)	17	11,3%
There was no reason for referral in the medical	16	10,6%
Diagnostic hypothesis of dental caries	5	3,3%
Total	**150**	**100%**

Table 2: Distribution of patients referring to medical referral - HCFMUSP - 2007-2013. Source: *Dentistry team of The Institute of Psychiatry of the Hospital das Clínicas, Faculty of Medicine, University of São Paulo.*

Of the 30 patients referred for reasons of behavior change, 26 patients actually had oral problems that justified the referral and 04 patients had healthy teeth with no oral problems. Regarding

the main complaint reported by the caregiver, 40 (26.6%) reported changes in the patient's behavior such as: pointing to the teeth several times during the day and punctures in the teeth region, and 34 (22.66%) patients had problems oal and 6 (4%) patients presented healthy teeth with no periodontal disease, 26 (17.3%) reported no complaints 15 (10%) reported that they went to the office for a routine evaluation, 11 (7.3%) reported difficulty in brushing, 10 (6.6%) of the charts were not annotated, 9 (6%) reported gingival bleeding, 9 (6%) reported dental caries problems, 5 (3.3%) reported dental fracture, 5 (3.3%) orthodontic complaints, 4 (2.6%) (0,66%) reported severe salivation, 1 (0,66%) lip lesions, 1 (0, 66%) bad breath and 1 (0.66%) supernumerary teeth (table 3).

Main complaint according to caregiver	Number of patients	%
Behavior change	40	26,6%
No complaints	26	17,3%
Routine assessment	15	10%
Difficulty in brushing	11	7,3%
No record in the medical record	**10**	6,6%
Dental cavity	9	6%
Gingival bleeding	9	6%
Tooth fracture	6	4%
Tooth exfoliation	5	3,3%
Orthodontic complaints	5	3,3%
Tooth tightening	4	2,6%
Bad teeth	2	1,3%
Dental evaluation included	2	1,3%
Dental evaluation included	2	1,3%
Dental mobility	1	0,66%
Intense salivation	1	0,66%
Lip Injury	1	0,66%
Bad breath	1	0,66%
Supernumerary tooth	1	0,66%
Total	**151**	**100%**

Table 3: Distribution of patients referring to the main complaint - HCFMUSP - 2007-2013. Source: *Dentistry team of The Institute of Psychiatry of the Hospital das Clínicas, Faculty of Medicine, University of São Paulo.*

Dental caries were diagnosed in 41 (27.3%) patients, 39 (26%) caries and gingivitis, 26 (17.3%) had healthy teeth, 20 (13.3%) had gingivitis, 9 (6%) dental fracture, 5 (3.3%) diagnosis of mobility in deciduous teeth, 4 (2.6%) of the patients did not include annotations referring to the diagnosis in the medical record, 2 (1.3%) unsatisfactory restoration, 1 (0.66%) bruxism, 1 (0.66%) included tooth and 1 (0.66%) did not allow evaluation (table 4).

Dental diagnosis	Number of patients	%
Dental cavity	41	27,3%
Caries and gingivitis	39	26%
Healthy teeth	26	17,3%
Gingivitis	20	13,3%
Tooth fracture	09	6%
Mobility deciduous tooth	05	3,3%
No annotations in the medical record	04	2,6%
Restoration unsatisfactory	02	1,3%
Bruxism Dente incluso Não permitiu avaliação	01 01 01	0,66% 0,66% 0,66%
Total	**149**	**100%**

Table 4: Distribution of patients referring to odontological diagnosis - HCFMUSP - 2007-2013. *Source: Dentistry team of The Institute of Psychiatry of the Hospital das Clínicas, Faculty of Medicine, University of São Paulo.*

The CPO-D index presented a mean of 3.6 and a median of 3.7 (ranging from 12 to 35 years), the rate of ceo-d presented a mean of 1.86 (ranging from 2 to 11 years). Table 5 shows the distribution of patients.

Age group	ceo-d	CPO-D
7 years	1,63	
8 a 11 years	2,10	
12 a 14 years		
15 a 21 years		1,88
22 a 28 years		2,91
29 a 35 years		4,64
		5
Total	**3,73**	**14,43**

Table 5: Distribution of patients referring to ceo-d and CPO-D. Fonte: Equipe de Odontologia do IPq do HCFMUSP.

Regarding the behavior of patients during dental care; 61 (40.6%) of the patients allowed dental care and there was no need for outpatient sedation, 47 (31.3%) presented agitation, requiring ambulatory sedation, 39 (26%) presented agitation, treatment was

not possible ambulatory sedation undergoing general anesthesia in a surgical center and 3 (2%) of the patients were not attended (Table 6).

Type of care Number of patients%	Type of care Number of patients%	%
Ambulatory care with sedation	61	40,6%
Ambulatory care with sedation	47	31,3%
Assistance under general anesthesia in a surgical center	39	26%
Records without annotations	3	2%
Total	**150**	**100%**

Table 6: Distribution of patients referring to dental care - HCFMUSP - 2007-2013. *Source: Dentistry team of The Institute of Psychiatry of the Hospital das Clínicas, Faculty of Medicine, University of São Paulo.*

The care under general anesthesia in a surgical center was performed in patients who presented agitation and atypical behavior when undergoing dental treatment under sedation or because of contraindication.

Discussion

The incidence of ASD in recent years has increased and the prevalence is from 1 to 68 children according to CDC-2014 data, with a predilection for males, which was also observed in this sample. The CPO-D values were compatible with those suggested by WHO / FDI (WHO, 2010). The compromised oral hygiene of autistic patients may contribute to an increased risk for caries and periodontal diseases [1,2,14]. In this study, a little more than half of the patients were referred as a routine consultation, a reason that demonstrated the concern of the medical team and the caregivers regarding the preventive oral health of these patients. Due to the difficulty in communicating patients it becomes a challenge to identify dental problems, so the participation of the caregiver and the multidisciplinary team assists the dental surgeon in the diagnosis and treatment of patients with ASD [11,15].

Of the patients referred by the behavior change table with a medical diagnostic hypothesis of dental pain to clarify almost the whole, presented dental-oral diseases. Some patients with ASD may present behavioral changes and agitation due to the disorder itself, requiring anxiolytic and sedative medications to control the symptoms [2,6]. However, systemic abnormalities such as; pain, gastrointestinal problems and loss of sleep may exacerbate symptoms, causing imbalance in drug therapy and worsening the patient's clinical condition [16]. Orofacial pain may be a reason for behavior change in patients with ASD, so dentists should use instruments [12]. This conduct provides better treatment and avoids unnecessary interventions.

This study suggests that carries and periodontal disease may influence behavior change and psychomotor agitation in patients with ASD. However, controlled studies should be performed to clarify whether this relationship occurs. As most of the time it is the caregiver who reports the patient's behavior change, he should be asked about the time, the form and amount of times the patient presented the changes and their relationship to the oral cavity or face. You also need to watch for possible drug changes. All this information will help the dental surgeon to evaluate the relationship of oral problems and behavior change of these patients. In general, there is an intimate relationship that the caregiver establishes with the autistic, being also subject to anxiety in the search of the patient's behavior change. The dentist should pay attention to the information provided by the caregivers and with detailed analysis, investigate oral problems that may be associated with these behaviors, in order to offer a better quality of life for the patients [17]. This study showed differences regarding the complaint reported by the caregiver and the reason for medical referral, so it is possible that the reason for the medical referral is motivated by the caregiver: 26.6% of the patients with reports of behavior change by their caregivers, 22.6% presented oral problems and only 4% presented healthy teeth. Due to the conviviality of the caregivers with the autistic patients, they end up knowing these patients and knowing how to identify atypical behaviors. Therefore, it is fundamental that the dental surgeon correlates the caregiver's wishes with the clinical signs of possible oral problems, in order to resolve any doubts that the caregiver may report and to try to solve the dental problems that may be the cause of the patient's complaint [18]. Dental treatment without sedation was performed in the majority of the autistic patients, a considerable part of them requiring ambulatory sedation or hospitalization for the surgical center. According to Gandhi et al., Ambulatory care should be prioritized by considerably reducing the risks inherent in hospitalization and general anesthesia, in addition to reducing the final cost of dental care. Therefore, prevention of oral diseases is of great importance and all efforts should be directed towards the oral hygiene orientation. In a previous study of autistic children and adolescents we found that a portion of them responds adequately to preventive oral health efforts [19]. In conclusion, in this descriptive study we found that carries and periodontal disease were prevalent in patients with ASD and that the indication of toothache was present in the majority of patients who presented a change of behavior. Further studies are needed to clarify this relationship of toothache and behavior change.

Conclusion

- Prevalence according to the gender of ASD in the HCFMUSP IPq Dentistry Team was similar to that found in the literature.

- In this sample, the percentage of autistic patients who presented behavior change and who also presented oral diseases was

20%, these data justify further investigations.

- The oral diseases with the highest incidence in this group of autistic were dental caries and gingivitis.

- The number of autistic patients attended in a clinic with a need for sedation

- Was significantly higher than those under sedation.

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