

Prevalence of Self Injuries and Dental Trauma in a Sample of Autistic Patients in Caracas – Venezuela

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Abstract: The object of this research was to establish the prevalence of self-injuries and dental trauma in a group of autistic patients. An observational cross-sectional study was made with 94 pediatric patients diagnosed with autism of ages ranging between 4 and 14 years. The patients were evaluated and the presence of self-injuries was established; the legal guardians were also asked if the children showed any self-injurious behavior. It was determined that 20.2% (19 patients) showed self-injuries and, while 13.8% of the children evaluated had a history of trauma, the remaining 82.3% did not show any previous history of trauma. No significant statistical difference was observed between their diet and the presence of self-injurious behaviors.

Keywords: Autism, injuries, self-mutilation.

1. INTRODUCTION

Autism is a serious and complex disorder with a biological base of the development of the brain first described in 1943 by Kanner. In the last 50 years autism has been defined as the most severe neuropsychiatric disorder of childhood. The main characteristics of autism are associated to socialization problems, communication deficits, repetitive and stereotyped behaviors, and cognitive inflexibility [1, 2]. Autism has a prevalence of 1 case in every 68 children, representing an increase of over 6,000% when compared to the last few decades. For this reason it has become a matter of public health in many countries. It's predominant in males, with a 4:1 ratio [2, 3].

Autism is associated to a wide range of repetitive behaviors which, although diagnostic for the disorder, have been the subject of far less attention than social and communication deficits. An understanding of the phenomenology of various forms of abnormal repetition, including co-morbidity requires improved methodology, such the use of item-independent instruments capable of discriminating categories of repetitive behaviors or movements [4]. Self-injury or self-mutilation is defined as a behavioral disturbance that consists of deliberate destruction of or damage to body tissues that is not associated with a conscious intent to commit suicide. It is a compulsive act that may take place to release emotions, such as anger and anxiety, offering a sense of control and safety [5].

These behaviors are often rhythmic and repetitive and can range from mild head rubbing up to severe head banging and can even become life threatening. The most frequent self-injurious behaviors are head banging, usually in combination with biting, scratching or hair pulling [6].

The etiology of self-injuries can be divided into organic and functional. Organic etiologies include metabolic factors and genetic disorders. The patients hurt themselves without being aware of the intentional and compulsive act. This includes hereditary disorders and genetic and biochemical factors, as well as enzymatic deficiencies. Functional etiologies are made in awareness, and are a response to certain stimuli [7]. Prevalence is higher in females. In the general population, prevalence is estimated at 750 per 100,000, with an increase in developmentally disabled individuals from 7.7% to 22.8%, and reaching 40% in individuals with severe mental retardation. The reported prevalence among groups of psychiatric patients varies between 21% and 82% [5]. The exact prevalence of self-mutilation in the world is uncertain and probably underestimated [8]. There are several theories associating this behavior to a deficiency in the levels of neurotransmitters, such as serotonin and dopamine. Studies made on self-injurious patients show some degree of depletion or deregulation in the serotonergic or dopaminergic systems, which play a role in the regulation of emotions, mood, impulsiveness, aggression, among others [5].

In terms of the opiate system, it has been suggested that it could be affected in some individuals, in such a way that they may require an increased

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release of endogenous opiates, in order to maintain an optimum or adequate level. The findings backing this hypothesis report increased levels of endogenous opiates, specifically of met-enkephalin, in patients hospitalized due to self-mutilating behaviors [5, 9]. The opiate hypothesis maintains that patients engage in self-injurious behavior (SIB) either because they are partially analgesic (pathologically altered pain threshold), or because SIB supplies a "fix" for an addicted endogenous opiate system. The finding that opiate antagonists attenuate SIB is the strongest evidence for the opiate hypothesis [9].

The purpose of this study was to assess the prevalence of self-injurious and dental trauma among Venezuelan autistic patients. This research is important because nowadays autism has a high prevalence and self-injurious and dental traumas are directly related with this condition and dentists should be prepared to treat these cases with success.

2. MATERIALS AND METHODS

An observational transversal study was made, in which 94 pediatric patients, diagnosed with autism, were evaluated after attending a dental clinic specialized in children with special needs located in the city of Caracas. All patients who signed, or whose legal guardians signed an informed consent accepting the dental evaluation, were considered in the inclusion criteria. The ethical approval for the study was granted by the Bioethics Committee of the School of Dentistry of Santa Maria University. The age group ranged between the ages of 4 and 16 years. Once the sample was selected, the legal guardians of each of the patients were questioned, and their medical history was reviewed to gather data such as the following of a gluten, casein and sugar-free diet. All patients were examined by a single previously calibrated operator, checking for the presence of trauma or injuries caused by self-injurious behavior. The statistical analysis was performed with IBM SPSS software, version 20.0.

3. RESULTS

The age group ranged between the ages of 4 and 16 years, with a mean of 7.24 ± 2.61 . Distribution in terms of gender was 78 males (83%), and 16 females (17%).

94 patients diagnosed with autism were evaluated in this study. It was determined that 20.2% (19 patients) showed SIB, some of which were bite marks in hands, arms and lips in 12 patients, scratches in 5, and banging in chin and forehead area in 2. One of the male patients practiced a self-dental extraction. 13 patients that injured themselves were males, and 6 were females. None of the patients showed any severe self-injuries.

When relating the presence of a diet with SIB, it was established that 65.13% of the patients that showed self-injuries were following a gluten, casein, and sugar-free diet, unlike 36.84% that also showed self-injuries, but did not follow the diet. On the other hand, 56% of the patients that did not show any self-injuries followed a diet, and 44% did not. When implementing the Chi-Square statistical test, it was determined that there was no significant statistical difference between both variables ($p = 0.149$).

In terms of trauma, 13.8% of the children evaluated had a history of trauma, 10 of which suffered from fractures only of dental enamel, and of both enamel and dentine in some of the central upper incisor, and the remaining 3 a subluxation. One of the patients diagnosed with a subluxation suffered another trauma, and lost the upper left incisor. The remaining 83.2% had never suffered any dental trauma. In terms of gender, 92.3% of the patients with a history of trauma were males.

4. DISCUSSION

In this study it was determined that 20.2% of the autistic patients showed SIB. Similar results were obtained by DeMattei *et al.* [10], who determined that 25.6% of the autistic patients showed self-injuries. However, these results are lower than those obtained by Richards *et al.* [11], who after evaluating 149 autistic patients established that 50% showed self-injurious behavior. Similarly, Murshid *et al.* [12] evaluated 20 autistic patients, and determined that 70% of them showed signs of self-injuries. This author did not find any severe self-injuries, unlike this study, in which one of the patients extracted one of his own tooth, as in the case reported by Williams [13] who described the experience of a 12 year old autistic patient who did the auto extraction of twelve permanent teeth. In contrast

with the aforementioned works, Klein *et al.* [14] argue that the self-injuries occur in between 4 and 5% of the individuals with psychiatric conditions, especially those diagnosed with autism, schizophrenia and brain damage. In the same order of ideas, Richards *et al.* [11] reported that those children with autism were approximately six times more likely to engage in self-injury than those without autism.

According to Hyman *et al.* [15], most frequent SIB found in the 97 of the children evaluated were bangs to the head; bite marks and scratches, which match the findings of this study. After evaluating the prevalence of SIB based on gender, it was established that it was more prevalent in males, as 37.5% of the boys showed self-injurious behavior; unlike the girls, which only had a prevalence of 16.6%. Minshawi *et al.* [16] affirmed that gender is one such variable; some researchers have indicated that males are more likely to engage in any problem behavior, whereas others have stated there is no such relationship. Although the typical clinical features of oral self-inflicted lesions are well documented, they often represent a challenge for the clinician and, even when recognized, their management is not well defined [8].

In terms of dental trauma, 13.8% of the children showed dental injuries. In a different study, Ferreira *et al.* [17] found a 9.2% prevalence of dental trauma in patients with special needs. These results are lower than those obtained by Altun *et al.* [18], who evaluated a group of autistic patients, and determined that 23% showed dental trauma. In that study, the most frequent injury was the fracture of the enamel in the permanent maxillary central incisors, as in the study herein. Likewise, Du *et al.* [19] who evaluated a group of autistic patients concluded that 22,2% presented trauma to teeth and the majority were to the anterior teeth. Similar results were obtained by Orellana *et al.* [20] who evaluated a group of autistic patient and concludes that 20% of their population presented dental trauma.

The prevalence of SIB and dental trauma in this Venezuelan autistic group are lower than the rest of those recently published.

CONCLUSIONS

SIB and dental trauma are more frequently found in autistic patients. It is important that the dentist is trained to handle and treat these manifestations, as

75% of SIB can usually be found at the level of the head and the neck, and in many cases can cause dental trauma. Autistic patients in this study showed a lower prevalence of self-injuries and dental trauma than that reported by other authors worldwide.

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