

History of Past/Current of Medication Use in Severe or Destructive Bruxers: An Intragroup Comparison Study.

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Abstract

Introduction: Severe or destructive bruxing behavior being diurnal, nocturnal or mixed is a significant problem and a challenge regarding both, restorative dentistry and pharmacological intervention.

Aim: Evaluate past and current use of medication in destructive bruxers, test the hypothesis that they have a history of greater use of antidepressants and anti-anxiety medication.

Methods: Clinical examination, use of self-reported questionnaires, history of chief complaint and data collection about past present use of medication in 41 subjects with both craniomandibular disorders and destructive bruxing behavior.

Results: Mean of different past and or current medications reported were about 5,1 (destructive bruxers); 1,8 (mild bruxers) and 2,6 (No CMDs). Kruskal-Wallis statistics, $p < 0,0001$: Destructive versus mild bruxers ($p < 0,001$); destructive bruxers versus no CMDs ($p < 0,001$); mild bruxers versus No CMDs ($p > 0,05$). 82,9% destructive bruxers, 56,7% mild bruxers and 40% Non CMDs subjects respectively, reported past and or current use of analgesics or anti-inflammatory drugs: Chi-squared for independence $p < 0,0008$, for trends $p < 0,0002$. Destructive versus mild bruxers $p < 0,01$; destructive bruxers versus Non CMDs $p < 0,0003$; mild bruxers versus Non CMDs $p = 0,30$. 29=70,7% destructive bruxers, 13=43,3% mild bruxers and 9=30% Non CMDs subjects reported past and or current use of muscle relaxation drugs. Chi-squared for independence $p < 0,002$, for trends $p < 0,0005$: destructive versus mild bruxers ($p < 0,02$); destructive bruxers versus No CMDs ($p < 0,0008$); mild bruxers versus No CMDs ($p = 0,42$). 31,7% ($n = 13$) destructive bruxers, 4=13,3% mild bruxers and 6=20% No CMDs subjects reported past or current use of antidepressants. Chi-squared for independence $p = 0,17$, for trends $p = 0,19$: destructive versus mild bruxers ($p = 0,09$); destructive bruxers versus No CMDs ($p = 0,29$); mild bruxers versus No CMDs ($p = 0,73$). Use of anti-anxiety drugs were reported by 17,1% destructive bruxers, 0% mild bruxers and 3,3% No CMD subjects, respectively. Chi-squared for independence ($p < 0,01$), for trends ($p < 0,02$): Fisher's exact test, Destructive versus mild bruxers ($p < 0,01$); destructive versus no CMDs ($p = 0,12$); mild bruxers versus No CMDs ($p = 1,000$).

Conclusions: Destructive bruxers used a higher frequency of different medications to alleviate or reduce their pain, muscle tension, anxiety and depression.

Keywords: Destructive bruxism Craniomandibular Disorders Medication Anti-anxiety Drugs Antidepressants.

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I. Introduction

Craniomandibular disorders (CMDs) represent a wide range of functional changes and pathological conditions affecting the temporomandibular joints (TMJs), masticatory muscles and other components of the stomatognathic system, usually of musculoskeletal origin^[1]. Such disorders include a complaint of pain, joint noises, tenderness to palpation of muscles and joints, impaired jaw movements and headache of musculoskeletal origin. Bruxing behavior or (BB) is currently defined as the involuntary, unconscious and excessive grinding, tapping or clenching of teeth usually classified as diurnal or nocturnal and frequently associated with anxiety, stress, anger and frustration^[2]

Teeth grinding in sleep bruxism (SB) is produced by rhythmic or sustained-tonic contractions of the masseter and other jaw muscles usually occurring without patient's awareness during sleep or wakefulness. Bruxism is usually considered a pathological condition when it is associated with severe tooth damage, noise disturbs bed partners, sleep is disturbed and pain is reported by patients^[3]. Severe nocturnal BB is now recognized as a significant problem in Dentistry, Medicine and Psychology which may cause a variety of clinical complaints on awakening in the morning including headache, TMJ pain, cervical pain, jaw locking, severe facial pain and even toothache^[4]. Because severe or destructive bruxism may cause a variety of severe symptoms in the masticatory system^[5] many patients use a variety of pharmacological approaches including analgesics and anti-inflammatory drugs, muscle relaxation, anti-anxiety agents and even antidepressants.

Cases of severe or destructive BB may have extensive history of treatments including physical therapy, medications, several types of occlusal splints and occlusal adjustment, orthodontic, psychological counseling and some cases may be described as treatment failures^[5]. Cases of more severe or destructive BB may present with severe muscles disorders including spasm, muscle pain, incoordination and difficulties to perform jaw movements, thus, patients may be encouraged to use greater amounts of muscle relaxation drugs. Even though severe, destructive or extreme BB being diurnal, nocturnal or mixed, has been recognized in the last two decades, little is known about medication use or abuse in destructive bruxers, for instance, it has not been established whether excessive medication is related with severer pain and muscles disorders and increased use of muscle relaxation and anti-anxiety drugs. Thus, the objectives of this investigation are the following:

1. Evaluate past/current different medication use in a subset of CMDs individuals with severe or destructive BB;
2. Test the hypothesis that because severe or destructive bruxers are more recalcitrant to pharmacological treatment, they may have a history of greater past or current use of analgesics and anti-inflammatory, muscle relaxation, anti-anxiety and antidepressant drugs at the time of first interview for diagnosis and treatment.

II. Methods

Subjects in this investigation were those that had been evaluated comprehensively during a period of 10 years. Clinical examination of muscles, joints, face and teeth, history of chief complaint (usually pain), self-reported questionnaires and responses to psychological tests were used to gather data. Once subjects were comprehensively evaluated, all those demonstrating destructive bruxism were kept in a separate file under the name "Destructive bruxers". During clinical evaluation, the principles of the Helsinki declaration were followed: Patients were informed that their clinical evaluation and use of questionnaires had no absolute risk for their health, that any physical or psychological discomfort, warranted the discontinuity of the evaluation, that an accurate and comprehensive evaluation was necessary in order to obtain accurate data and diagnosis before planning and treatment, that the principal examiner was scientifically experienced and qualified and that his or her data would provide practical clinical benefits for other patients in potential studies and treatments. Patients signed a formal consent allowing the use of their clinical and demographic data for research purposes. Forty-one (41) clinical charts from those previously classified as destructive bruxers (experimental subgroup), 30 from those classified as presenting mild BB (control 1 subgroup) and 30 from those previously classified as presenting BB without CMDs (control 2 subgroup) were retrieved and evaluated retrospectively. All patients and controls were evaluated consecutively in the same period of time.

Inclusion criteria for CMDs: Presence of joint noises, a complaint of muscle and or joint pain, tenderness to palpation of masticatory muscles and TMJs, difficulties to perform normal jaw movements and headache.

Inclusion criteria for BB: Three or more signs and symptoms of BB based on patients self-report, clinical examination and presence of some signs and symptoms, for instance, tongue biting, cheek biting and so on.

Inclusion criteria for destructive BB: Sixteen or more signs and symptoms of bruxing behavior according to a scale of severity published previously elsewhere^[6].

Exclusion criteria: Both experimental and control subjects were not included in this investigation if they presented severe psychiatric disorders, cognitive impairment, unwillingness to cooperate fulfilling the questionnaires, neuromuscular disorders including Parkinson disease and or other seizure disorder and those that were being treated simultaneously in other medical or dental facility.

III. Statistical Analysis

Chi-squared for independence and for trends, Kruskal-Wallis statistics and Fisher's exact test were used in the current investigation.

IV. Results

This clinical investigation evaluated a group of 41 individuals presenting with destructive BB and CMDs, a subgroup of 30 subjects demonstrating signs and symptoms of mild BB and CMDs, and 30 subjects presenting BB without sign and symptoms of CMDs. There were 40 females (97,6%) and 1 male (2,4%) in the experimental subgroup, mean age was about 36,0 years (SD=11,3, range=17-63). There were 21 females and 9 males (70% and 30%) in the mild BB subgroup and mean age was about 32,5 years (SD=12,0, range 17-64). There were 21 females and 9 males (70%, 30%) and mean age was about 32,7 years (SD=14,2, range=13-70) in the Non CMDs subgroup. Age was not different when the three subgroups were compared: Kruskal-Wallis statistics $p=0,23$.

Destructive bruxers reported more frequent use of different medications for their pain, muscle tension, inflammation, anxiety and or depression (mean 5,1 SD=2,5 range=1-12) as compared with the mild BB subgroup (mean 1,8, SD=1,9, range=0-6) and with the No CMDs subgroup (mean 2,6, SD=3,4, range=0-11). This difference was statistically significant (Kruskal-Wallis statistics $p=0,0001$): destructive bruxers versus mild bruxers $p=0,001$, destructive bruxers versus no CMDs $p=0,001$, mild bruxers versus no CMDs $p>0,05$. Destructive bruxers reported a frequency of 82,9% use of analgesics and anti-inflammatory drugs as compared with 56,7% in the mild BB subgroup and with 40% in the Non CMDs subgroup (Chi-squared for independence $p=0,0008$, for trends $p=0,0002$): destructive versus mild ($p=0,01$), destructive versus No CMDs ($p=0,0003$); mild versus No CMDs ($p=0,30$). Frequencies of 70,7%, 43,3%, and 30% past or current use of muscle relaxation drugs were reported by destructive, mild bruxers and non CMD subjects, respectively (Chi-square for independence $p=0,002$, for trends $p=0,0005$). Fisher's exact test: Destructive bruxers versus mild bruxers ($p<0,02$); destructive bruxers versus non CMDs ($p<0,0008$); mild bruxers versus no CMDs ($p=0,42$).

Regarding antidepressants use, 13 destructive bruxers (31,7%), 4 mild bruxers (13,3%) and 6 (20%) non CMDs subjects reported past or current use of antidepressants. Chi-squared for independence and for trends (0,17 and 0,19, respectively). Fisher's exact test: Destructive bruxers versus mild bruxers ($p=0,09$); destructive bruxers versus No CMDs ($p=0,29$); mild bruxers versus No CMDs ($p=0,73$). Regarding use of anti-anxiety drugs, 17,1% destructive bruxers, 0% mild bruxers and 3,3% No CMDs subjects reported the use of such drugs, (Chi-squared for independence ($p<0,01$), for trends ($p<0,02$): Destructive versus mild bruxers ($p<0,01$); destructive bruxers versus No CMDs ($p=0,12$); mild bruxers versus No CMDs ($p=1,000$).

V. Discussion

Destructive bruxers demonstrated a past/current history of greater use of medication including analgesics, muscle relaxation, antidepressants and anti-anxiety drugs as compared to the other control subgroups. Thus, the outcome of this investigation is congruent with previous investigations^[7,8,9] demonstrating that because destructive bruxers are more depressive, more anxious and complain of pain in multiple sites, they make greater use of medication as compared with other BB types. Severe types of BB being diurnal, nocturnal or mixed, complain of more severe pain, muscle disorders, anxiety and depression^[10] and thus, they take greater amounts of different medications to alleviate their pain, suffering and improve quality of life. It may be that any BB type has multiple causes and mechanisms including central, psychosocial and peripheral factors^[11], and thus, many pharmacological approaches are used to alleviate pain, decrease muscle spasm and reduce anxiety and depression. The medical and dental management of BB is complex and many therapeutic approaches should be used including occlusal splints, antidepressants, anticonvulsants, anti-anxiety agents and muscle relaxation drugs^[12].

We found that some patients in the current investigation reported past or current use of anti-anxiety drugs. Thus, this outcome is congruent with one investigation^[13] reporting that in patients with psychiatric and sleep comorbidities, the acute use of clonazepam at night may improve sleep, bruxism and abnormal muscle activity. Destructive bruxers are behaviorally and clinically complex individuals with a frequent history of many clinical treatments including greater use of different medications, physiotherapy, many forms of occlusal adjustment and psychological counseling^[5]. It has been stated that the treatment of BB is a very difficult endeavor. It may be that patients are not comprehensively evaluated in the clinical setting and thus, most of the time, the clinician is not able to discriminate the different severities of BB. In the case of destructive bruxism, severe occlusal disorders, pain in multiple sites, headaches and sleep disorders are usually reported. In the case of sleep disorders, clonazepam has shown satisfactory results reducing sleep bruxism^[14].

Destructive bruxers demonstrated a history of more frequent past/current use of muscle relaxants and anti-anxiety drugs as compared with mild bruxers. Severe muscle disorders, TMJ internal derangements, cervical pain, and headaches are observed frequently in destructive bruxers^[15], thus, they take greater amounts of such drugs in order to ameliorate pain, reduce muscle spasm and improve jaw movements. Personality profile, stress and anxiety are major etiologic factors in SB^[12], thus, cognitive behavioral therapy, relaxation techniques and muscle relaxants and anti-anxiety agents should be used to reduce anxiety, stress and chronic masticatory muscle contraction. Chronic muscle spasm and some psychiatric disorders including anxiety,

depression and somatization are common disorders observed in destructive bruxers, thus, clonazepam, a benzodiazepine is usually prescribed to ameliorate sleep^[13], reduce muscle spasm and stress in patients with destructive bruxism and facial pain. In the current study, most destructive bruxers used a combination of treatment to reduce signs and symptoms of BB including many pain killers, muscle relaxants, anti-anxiety drugs and even antidepressants. It may be that none of these management approaches when used as the only mode of treatment does not neutralize many of the mechanism involved in multiple pains and severe muscle tension observed frequently in destructive bruxers. This point of view is congruent with one investigation^[16] reporting that the response of pharmacological treatment in patients with diurnal bruxism secondary to chronic antidopaminergic drug exposure, is usually poor. The outcome of this investigation is congruent with one study^[5] in a small subgroup of destructive bruxers reporting that before clinical evaluation patients had received a number of treatment approaches including physical therapy, various types of medications, occlusal splints, occlusal adjustments, psychological counseling, and even surgery.

As for antidepressants, the frequency of past or current use of such drugs was higher in the destructive BB subgroup. Even though, the groups were not independent and the trend was not statistically significant, data indicate a trend for more frequent use of such drugs in destructive bruxers. In some studies, BB has been defined as a psychosomatic disorder^[17]. Thus, it is expected that destructive or more severe BB subjects demonstrate higher levels of depression, anxiety and somatization. Consequently, physicians and other professionals in the medical field may be more inclined to prescribe antidepressants to alleviate patients' suffering. Ware and Rugh^[5] evaluated a small subset of destructive bruxers and reported that they had taken different medications including antidepressants before initial interview. One investigation^[18] reported that severe and destructive bruxism was correlated with higher scores in somatization, depression and anxiety. Doctors treating patients with somatization usually prescribe antidepressants to reduce depression in such patients.

VI. Conclusion

In conclusion we highlight the observation that destructive bruxism is a complex clinical and psychological disorder characterized by pain in multiple sites, use of greater amounts of medication, more specifically pain killers, muscle relaxation, anti-anxiety and antidepressant drugs. This is so, as clinicians usually diagnose the behavior rather than its complexity. Because patients change from one medication to another, one conclusion in this investigation is that a long period of time may elapse until patients receive a comprehensive and satisfactory treatment for destructive bruxism and its clinical manifestations. Because of their clinical and psychological disorders, destructive bruxers are more likely than other CMDs patients to use different and larger amounts of medication to alleviate their suffering.

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Table 1: Social and demographic data in destructive bruxers (n=41), mild bruxers (n=30) and non CMDs and bruxers (n=30).

SUBGROUPS							
Destructive							
		Bruxers=41		Mild Bruxers=30		No CMDs=30	
GENRE	n	%	n	%	n	%	
Females	40	97,6	21	70	21	70	
Males	1	2,4	9	30	9	30	
Totals	41	100	30	100	30	100	
AGE							
Mean	36,0		32,5		32,7*		
SD	11,3		12,0		14,2		
Range	17-63		17-64		13-70		

*Kruskal-Wallis test p=0,23: Age differences were not statistically significant.

Table 2: Mean amount of medication use in three subgroups

SUBGROUPS			
MEDICATION USE	Destructive	Mild Bruxers	No CMDs
USE	Bruxers=41	Bruxers=30	Bruxers=30
Mean	5,1	1,8	2,6*
SD	2,5	1,9	3,4
Range	1-12	0-6	0-11

*Kruskal-Wallis statistics p<0,0001: Destructive versus mild bruxers (p<0,001); Destructive bruxers versus no CMDs/bruxers (p<0,001); mild bruxers versus no CMDs/Bruxers (p>0,05).

Table 3: Past/current use of analgesics, muscle relaxants, antidepressants and anti-anxiety drugs in destructive bruxers (n=41) and control subgroups.

SUBGROUPS							
		Destructive bruxers		Mild bruxers		No CMDs bruxers	
		n=41		n=30		n=30	
	n	%	n	%	n	%	
Analgesics and anti-inflammatory drugs							
Yes	34	82,9	17	56,7	12	40*	
No	7	17,1	13	43,3	18	60	
Totals	41	100	30	100	30	100	
Muscle relaxants							
Yes	29	70,7	13	43,3	9	30**	
No	12	29,3	17	56,7	21	70	
Totals	41	100	30	100	30	100	
Antidepressants							
Yes	13	31,7	4	13,3	6	20***	
No	28	68,3	26	86,7	24	80	
Totals	41	100	30	100	30	100	
Anti-anxiety Drugs							
Yes	7	17,1	0	0	1	3,3****	
No	34	82,9	30	100	29	96,7	
Totals	41	100	30	100	30	100	

*Chi-squared for independence (p<0.0008), for trends (p<0,0002)

** Chi-squared for independence (p<0,002), for trends (p<0,0005)

*** Chi-squared for independence (p=0,17), for trends (p=0,19)

**** Chi-squared for independence (p<0,01), for trends (p<0,02).

Destructive versus mild bruxers subgroup (Fisher's exact test p<0,01).

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