Case study: bruxism in a person with severe learning disability

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Abstract
The case study discusses a simple treatment approach for a person with a learning disability exhibiting bruxism.

Background

Definition
Bruxism can be defined as ‘the involuntary non-functional grinding or clenching of teeth’ (Macedo et al., 2007). It has been described as a habit disorder characterised by repetitive behaviour that appears to serve no social function.

Aetiology
A differentiation should be made between sleep bruxism and bruxism occurring during waking hours (diurnal bruxism) because they have different aetiologies (Koyano et al., 2008). Bruxism has two potential aetiologies, anatomical or biological and psychological (Lang et al., 2009). Anatomical causes for bruxism would be such things as occlusal abnormalities, dental trauma or rough cusps causing discomfort. Stress, boredom and frustration are examples of common psychological causes. Bruxism has also been associated with some neurological disorders, such as anoxic encephalopathy, Rett syndrome, cerebellar haemorrhage, intellectual disability and neurological disorders which have abnormal spasms and movements such as cranial dystonias and choreas (Tan and Jankovic, 2000). Bruxism has been reported to appear following brain injury particularly in comatose patients. The bruxism tends to appear when the patient regains the sleep-wake cycle and disappears only when a significant improvement in the level of consciousness has occurred (Pidcock et al., 2002). There can also be overlap between aetiological categories which can make assessment of the cause more difficult.

Clinical features
In its extreme, it is also known that bruxism can cause physical damage by causing or accelerating abnormal tooth wear, periodontal disease and temporomandibular disorders (Koyano et al., 2008). Continued muscle contraction may lead to inflammatory mediator build up, muscle fatigue and pain (Macedo et al., 2007). The clinical features of bruxism may include: patient or partner being aware of grinding through the noise produced; masseteric muscle hypertrophy; tongue ridging and cheek keratosis; history of fractured restorations; associated myofacial pain often presenting as headaches and joint noises in some patients (Macedo et al., 2007).

Assessment
Methods for assessing bruxism are numerous and can involve questionnaires, clinical findings (as outlined above) and application of various oral and facial appliances. Oral appliances can be made of polymethylmethacrylate or ethyl vinyl acetate and can be examined after a period of time (1 month to 3 months commonly) for signs of deterioration suggestive of bruxism.

Management
Treatment approaches to bruxism should be based on the aetiology. There are various managements used in the general population including occlusal interventions, behavioural approaches and pharmacological treatments. Common management approaches include the provision of information to the patient, occlusal splints to limit damage caused rather than alter the habit, the avoidance of caffeine and nicotine before bed, and regular sleep patterns. A literature review concluded that evidence regarding the management of bruxism is very poor (Lobbezoo et al., 2008). There is no evidence for occlusal equilibration treatments in the management of bruxism. The review provides some evidence that occlusal splints are effective in the management of bruxists with hard splints being more effective than soft splints. Biofeedback can be used so that patients ‘unlearn’ their bruxism behaviour. Behavioural approaches differ depending upon whether bruxism occurs when the patient is awake or asleep and involves behaviour modification and relaxation. When bruxism is thought to be related to operant conditioning, various psychological approaches can be tried such as differential reinforcement.
and/or punishment, response blocking or prompting (Lang et al., 2009).

Pharmacological treatment ranges from targeted approaches such as injection of botulinum toxin into the neuromuscular junction (Monroy and Fonseca, 2006) to the use of central nervous system medication such as antidepressants, antiepileptics and benzodiazepines (Lobbezoo et al., 2008). Unfortunately, there are very few randomised controlled trials examining treatment approaches for bruxism and much of the literature is based around case series and case reports.

**Bruxism in learning disability**

There is little published research that has examined bruxism in individuals with learning disabilities (Long et al., 1998). Studies have found however, that bruxism appears to be more common in individuals with a learning disability than in the general population (DeMattei et al., 2007). A study by Long et al (Long et al., 1998) examined various habit disorders in patients with learning disability and observed a relationship between the level of learning disability and bruxism, showing that individuals with a diagnosis of profound learning disability had the highest prevalence of bruxism and that individuals with severe learning disability also showed a high level of bruxism. The study found that bruxism commonly occurred when the individual was bored.

Methods of treatments for individuals with learning disability exhibiting bruxism are usually based on case reports. One case study described an eight-year-old boy with learning difficulties whose teacher pressed her finger firmly against the boy’s jaw for a few seconds each time he started to grind (Krammer, 1981). This intervention showed improvement in the bruxism behaviour after two weeks. Another case report (Bount et al., 1982) described two adults with profound learning disability who received a brief application of ice to the face when bruxism occurred. Other methods identified are therapeutic touch (Romer et al., 1998) whereby therapeutic touch practitioners claim by touch they can manipulate the patient’s energy field to help healing and reduce pain and anxiety, music therapy, massage and verbal praise (Lang et al., 2009). The literature emphasises the need for more research into the assessment and treatment of bruxism in individuals with learning disabilities.

**Case report**

A 41 year-old man with severe learning disability developed bruxism for which the cause was unclear. No identifiable environmental triggers could be found, such as changes to his living arrangements or his day to day activities and he was not exhibiting any signs of mental ill health that could have been the basis for this new behaviour. The gentleman was well known to the learning disability team and the consultant psychiatrist. He had a severe learning disability and this necessitated 24 hour support in order to supervise and prompt with all aspects of daily living. He was able to perform some basic tasks such as washing and dressing with only minimal prompting but was unable to do more difficult tasks such as doing up fastenings and tying shoe laces. He was unable to do more complex tasks such as making meals.

He had no speech, but was able to communicate using basic signing and other strategies such as gesture, touch, eye contact and vocalisations and was very motivated to communicate. His understanding of spoken word was influenced by his attention at the time and his interest in the subject that was being discussed, but he was thought to understand many nouns and some common verbs. He communicated emotions with vocalisations. Staff who knew him well would recognise when he was in pain by his mannerisms and gesturing. He did not communicate to staff that he was experiencing any pain in his mouth but staff did feel that he was aware he was grinding and was highly frustrated at not being able to stop himself from doing this.

The patient was able to walk unaided. This gentleman had a long history of exhibiting challenging behaviour in the form of aggression and showed food seeking behaviour. These behaviours did not alter in frequency or intensity at or around the time that bruxism was occurring. He had longstanding epilepsy since childhood, with a picture of both generalised and absence seizures, although these were well controlled with Levetiracetam medication. There was no association between his seizures and the bruxism.

This gentleman developed daytime bruxism and this was initially thought to be due to environmental stressors that had not yet been identified. It was also initially thought that it could be due to boredom but this hypothesis was discounted when the grinding continued even when busy doing activities he enjoyed. The bruxism initially began infrequently on one or two days per week and lasted for less than a minute each time. Gradually over several weeks the frequency and duration increased until he was grinding every day for between eight and twelve waking hours. Although this would usually be broken up with short periods of a few minutes with no grinding, on one occasion it was continuous for ten hours. He was examined by a Community Dental Officer who found evidence of a broken filling in his carious lower left first permanent molar, but no clear sign of pain. Although his pain was not formally assessed, examination and subsequent discussion with his carers revealed that pain was not thought to be an issue that could be responsible for his bruxism. It is possible that the broken filling itself may have been a trigger for the bruxism, or a result of the bruxism or could be unrelated. He was referred for dental treatment under sedation.

Numerous behavioural interventions were tried in order
Managing bruxism in a patient with severe learning disability is a complex task. Some of the difficulties include communication between the patient and the dental officer, assessing the individual who may not be compliant with the examination, assessing any pain which the individual may be experiencing and devising an appropriate method of treatment that is suitable for a person with learning disabilities.

Often management of bruxism in patients with learning disabilities involves numerous strategies and involvement of several members of the multidisciplinary team including the dental officer, psychologist, psychiatrist, case manager and care staff. Management may take time and the team need to be persistent in using all approaches until they find one that is suitable for the individual.

The patient in this case eliminated his bruxism by using a relatively simple approach that did not cause distress to the individual. A literature search has not revealed any similar cases where tooth brushing has been a treatment for daytime bruxism in a patient with learning disabilities. A possible hypothesis for the effectiveness of this intervention could be that the sensation provided by brushing teeth, affords a similar, but more satisfying sensation to that experienced during bruxism and hence, the patient receives the stimulation which he was seeking in a shorter period of time.

Although this is only one case, it would be interesting to the repeat the intervention to determine whether it may be a useful treatment option in other people with similar presentations. The simplistic and acceptable nature of the intervention would make it worthy of consideration for use in other patients.

It would be useful to assess if behavioural modification will decrease bruxism and to test the validity of the scale with different assessors. This could form a part of future research in various healthcare settings.

Discussion

Managing bruxism in a patient with severe learning disability is a complex task. Some of the difficulties include communication between the patient and the dental officer, assessing the individual who may not be compliant with the examination, assessing any pain which the individual may be experiencing and devising an appropriate method of treatment that is suitable for a person with learning disabilities.

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Summary

There is little published research related to bruxism in people with learning disabilities, yet it is a relatively common problem. New ideas for managing the problem have been tried on an individual basis, such as discussed in this case study. Larger scale studies would be useful to determine how successful these approaches are in decreasing the habit.

References


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