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Case Report

Topical Anaesthesia: A Step Too Far!

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ABSTRACT

In the past cocaine has been used as a dental anaesthetic however it is illegally used as a recreational drug. Cocaine users occasionally rub this substance onto their attached gingivae. Due to the effects of cocaine this can create unexpected periodontal problems in a susceptible host. We present the presentation and management of a case of ulcerative periodontitis in a patient with a topical cocaine habit.

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Introduction

A 35-year-old female patient presented to A&E following paracetamol overdose due to dental pain. Upon referral to Oral and Maxillofacial department initial diagnosis was acute ulcerative periodontitis, although not a typical presentation. Further investigations showed there to be Vincent's organisms affecting the area. Commonly Vincent's organisms include fusobacterium and spirochetes consistent with necrotising conditions [1]. We present this case as a severe acute but transient case of ulcerative periodontitis that may have been associated with topical cocaine use.

Case Report

The patient gave a history of heavy alcohol consumption, approximately 16 units a day. Perhaps more relevant was her regular use of cocaine, reportedly rubbing the drug onto her attached gingivae as is often the case with use of the substance recreationally. We speculate that the vasoconstrictive nature of cocaine causing local ischaemia may have contributed to these lesions in the oral cavity [2].

The patient was initially seen within a dental A&E clinic and referred to Oral and Maxillofacial Surgery. The patient was subsequently referred for a periodontal assessment to the local Restorative Dentistry department. Examination showed exposed bone around multiple permanent teeth with significant loss of soft tissue (Figure 1). A 6-point pocket chart showed generalised gingivitis as well as two localised deep pockets out with the affected areas of exposed bone. An orthopantomograph and cone beam computed tomography scan showed no obvious bony changes throughout the mandible or radiological signs of osteomyelitis. Swabs showed a light growth of candida, profuse growth of *streptococcus constellatus* and importantly Vincent's organisms were seen on microscopy. Pathology results of an area of exposed bone showed non-viable bone encrusted with filamentous bacterium.

Treatment involved hygiene phase therapy in addition to courses of both amoxicillin and metronidazole. Removal of exposed necrotic bone was carried out as required. The patient was encouraged to decrease her smoking and alcohol consumption, and she was counselled regarding her recreational drug use.

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Figure 1: Periodontium at initial presentation.



Figure 2: Post treatment images.

The patient was reviewed regularly during which oral hygiene instruction and preventative advice was reinforced. Her symptoms significantly improved following her initial treatment and resolved following removal of the exposed necrotic bone. At her most recent review, she reports no symptoms and she had cut down on her alcohol consumption to less than 14 units per week, quit smoking and stopped her use of cocaine. Clinical photos were taken at the visit (Figure 2) which showed good healing of the affected areas with minimal loss of attachment.

Discussion

Vincent's organisms or fusospirochetal organisms have been previously associated with necrosis [3]. One such species found in the oral cavity is *fusobacterium nucleatum* which can adhere to and infiltrate gingivae [4]. Key to this case was the patient's use of cocaine, in particular the fact she rubbed this substance into her attached gingivae along with snorting it. In a 2017/2018 Scottish crime and justice survey 19% of those who reported having used drugs in the previous 12 months reported they had used cocaine, this makes it the third most prevalent, with cannabis being the most common followed by prescription strength painkillers the respondents had not been prescribed [5]. This figure is significant enough that the healthcare professional should be aware that patients may present who abuse cocaine and be mindful of the implications that this may have when assessing the aetiology or managing their presenting complaint.

Topical use of cocaine may have an impact on the oral soft tissues in a number of ways. Cocaine has local anaesthetic properties by blocking sodium channels as well as causing vasoconstriction [2]. Due to the euphoria experienced, excessive tooth brushing may be a factor in causing damage to hard and soft tissues and due to the local anaesthetic properties, the patient may be unaware of the damage being caused until normal sensation returns [2]. Along with direct effects there is an understanding that chronic cocaine use can affect general health and is associated with poor oral hygiene and poor nutrition [6]. Previous case reports have also found an association with gingival ulceration and recession [6]. Reports have found greater levels of attachment loss in

those who use cocaine and 80% of cocaine users were found to have increased pocket depths between 5-6mm [7]. In vivo studies have correlated an immunosuppressive effect of the cocaine which could predispose patients to oral infections [8].

Conclusion

This case highlights the importance of an understanding of the effects of cocaine particularly on the oral cavity. A thorough social history should include non-judgemental questioning on substance abuse. We believe the topical cocaine application in this case compounded a commensal bacterium in the oral cavity to take hold and cause a severe acute atypical case of ulcerative periodontitis secondary to the locally ischaemic nature of this drug [2].

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