Case Report: Antibiotic Resistance in Dental Infections

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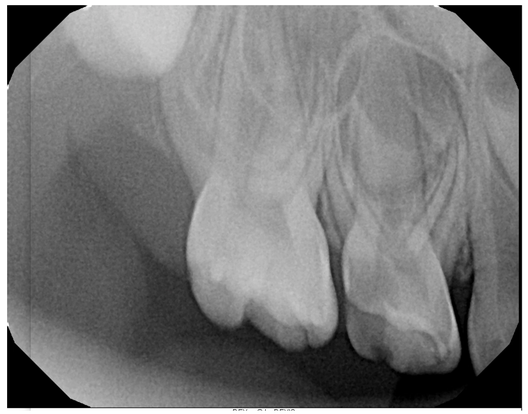
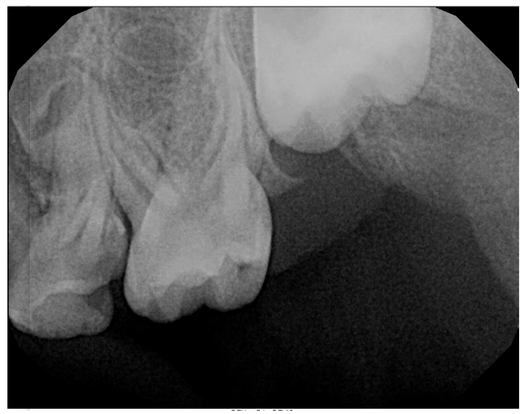
BACKGROUND

A 4-year-old male with a past medical history that was essentially negative and weighed 14.7 kg presented to the Riley Children's Hospital's Emergency Department with a large facial swelling into the periorbital area. The patient lived with his mother in Fort Campbell, Kentucky, but was visiting father for the weekend. The child had been taking 3 mL of Penicillin (250mg/5mL) three times a day for 6 days that was prescribed by a general dentist.

Radiographs





#B and #I have large caries that are into the pulp. Tooth #I has a furcal radiolucency.

Diagnosis and Treatment

Patient was admitted to the hospital and received overnight IV Unasyn antibiotic treatment. After 8 hours of receiving IV antibiotics, the swelling had significantly decreased. An IV sedation was scheduled the next day due to the patient being a difficult behavior management. We discussed with the parents that due to the large caries on #B as well as the offending #I both needed extracted. The parents agreed to the extraction of both teeth. Simple extraction of teeth #B and #I were completed under IV sedation. Patient was discharged the day of the extractions.

CLINICAL PRESENTATION

The father reported the swelling had been getting noticeably larger while following prescription instructions. A clinical exam was performed and teeth #I and #B had large caries. A large swelling was present in the periorbital area. A CT scan revealed no fluid filled abscess formation but was consistent with cellulitis.

ANTIBIOTIC RESISTANCE

Antibiotic resistance is a serious public health issue. Dentists consist of 10% of antibiotic prescriptions.[1] There are two different mechanisms that can cause antibiotic resistance. The first one is genetic mutations that cause resistant microbes, and the second is the exchange of genetic materials between resistant and sensitive microbes.[1] One factor that is leading to the over prescription of antibiotics is the belief of preventing the spread of the infection.[2] In reality, the best treatment is to get rid of the source of the infection by root canal therapy or extraction. The only exception is when cellulitis is present.[2] In a survey among members of the American Academy of Pediatric Dentists (AAPD), the dentists tended to overprescribe in pediatric patients for conditions such as localized dentoalveolar abscesses without sinus tracts (68%) and dentoalveolar abscesses with sinus tracts (39%).[3] Only 10-42% of AAPD and American Dental Association (ADA) members prescribed antibiotics according to the guidelines.[3] Ways to combat antibiotic resistance is to limit prescribing broad spectrum antibiotics, dose for a shorter duration, and prescribe according to the evidence based guidelines.[2]

REFERENCES

1. Loyola-Rodriguez, Juan Pablo, et al. "Determination and identification of antibiotic-resistant oral streptococci isolated from active dental infections in adults." *Acta Odontologica Scandinavica* 76.4 (2018): 229-235.
2. Bansal, Ramta, et al. "Antibiotic abuse during endodontic treatment: A contributing factor to antibiotic resistance." *Journal of Family Medicine and Primary Care* 8.11 (2019): 3518.
3. Leroy, Roos, et al. "Are systemic antibiotics indicated in children presenting with an odontogenic abscess in the primary dentition? A systematic review of the literature." *Clinical Oral Investigations* 25.5 (2021): 2537-2544.