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Saudi Journal of Biological Sciences

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## ORIGINAL ARTICLE

# Pattern of management of oro-facial infection in children: A retrospective

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Received 24 November 2015; revised 12 February 2016; accepted 5 March 2016

## KEYWORDS

Orofacial infections;  
Oral cavity;  
Odontogenic infections;  
Antibiotics;  
Children

**Abstract** *Background:* The purpose of this study was to determine the distribution and management of orofacial infection in children treated at one of the major hospitals in Jeddah City, Saudi Arabia over a 12-month period during the year 2014.

*Methods:* Data from the clinical records of 94 children (33 girls, 61 boys; aged 2–14 years) who presented for treatment of orofacial infection at the emergency dental department of the military hospital in Jeddah during a 12-month period. Patients were treated with antibiotic therapy. A favorable outcome was determined based on length of hospital stay.

*Results:* The results indicated that the most common cause of odontogenic infection in Saudi children was dental caries (88%). The primary posterior teeth (84%) were considered to be a major source of infection. The most commonly affected teeth were the primary first molars (34%), followed by the primary second molars (31%). Six children were hospitalized; four of these stayed less than 4 days, which was considered a short hospital stay. The most common treatment was antibiotics as 93% received a type of antibiotic.

*Conclusions:* The most common cause of odontogenic infection was dental caries which has been treated with antibiotic prescription and dental procedures.

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Peer review under responsibility of King Saud University.



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## 1. Background

Orofacial infections are a common health care concern in children and are a frequent cause of dental consultation worldwide (Gendron et al., 2000; Nair et al., 2014). More than 500 bacterial species are thought to constitute normal oral microbiota (Gendron et al., 2000). Oral microorganisms are often the causative agents in osteomyelitis, aspiration pneumonia, bacterial endocarditis, halitosis, periodontal disease, abscesses, pulpitis,

dental caries in children, cerebral infarction, coronary heart disease, and preterm low birth weight (Li et al., 2000). In many cases, acute infection of the oral cavity occurs as a result of neglected dental caries. Early management and recognition of orofacial infections in children is crucial to prevent systemic involvement (Cachovan et al., 2013).

Most orofacial infections are considered to be odontogenic in origin, whereas others are self-limiting in nature (Heimdahl et al., 1985; Planells et al., 2006). Many of these cases result from neglected dental caries; these infections can progress to facial cellulitis and systemic toxicity if untreated (Sandor et al., 1998). Odontogenic infections are polymicrobial, with anaerobic and mixed aerobic bacteria (Brook, 2003). In pediatric facial infections, disease can progress quickly, producing significant systemic symptoms, including fever, dehydration, and airway compromise (Sandor et al., 1998; Dodson et al., 2000). Because of the possibility of progression to systemic disease, early management and recognition of orofacial infections in children is necessary (Dodson et al., 1989; Parker and Khateery, 2001).

In children, unlike adults, the location of various anatomic infections is thought to be a helpful guide for diagnosis and management (Flynn and Halpern, 2003). Dentists must understand that although a disease might present initially as a simple infection, it requires appropriate and early management. Rapid and thorough initial assessment is the key to successful management.

Many studies have reported a higher incidence of dental caries in children in Saudi Arabia than in other countries (Flynn and Halpern, 2003). However, few studies have reported the incidence of orofacial infection in children (Achembong et al., 2014).

The primary focus of this study was to determine the incidence and management of orofacial infection among children aged of 6–14 who visited one of the major hospitals in Jeddah City, Saudi Arabia, over a 12-month period.

## 2. Methods

An ethical approval was obtained through the King Fahad Armed Force Hospital (KFAFH) Research Ethics Committee.

### 2.1. Study design

Clinical data were examined from the records of children treated at KFAFH for orofacial infection during a 12-month period of December 2013– December 2014.

### 2.2. Data collection

We collected data from all cases of orofacial infection in children aged 2–14 who presented for treatment at the emergency dental department of (KFAFH) in the city of Jeddah during a 12-month period. Two hundred files were pulled but any file with missing data on patient's age and medical condition was excluded from the study ending up having 93 cases. Treating clinicians completed a standardized data collection sheet to record information relating to patient demographics, medical history, dental history, history of current episode of facial swelling of odontogenic origin, clinical and radiographic findings and management, also, whether dental treatment under general anesthesia was needed, length of hospital stays, use

of antibiotics singly or in combination, and other treatment modalities. Infections were classified by anatomic location as either upper face or lower face, with or without extra-oral or intraoral swelling. Medical records of all included subjects were reviewed.

A hospital stay of less than 4 days and resolution of infection without surgery was considered a successful outcome. An unfavorable clinical outcome was defined as 4 days or more of hospitalization and the need for surgery.

All children with a clinically visible facial swelling of odontogenic origin were included in the study. Children with a facial swelling of non-odontogenic origin or intra-oral abscess with no clinically evident facial swelling were excluded.

### 2.3. Data analysis

The gathered data were entered into a computer and statistical analysis was performed with SPSS version 16 (SPSS, Inc., Chicago, IL, USA). Differences between the groups were determined with an unpaired Student's *t*-test. The group data on the presence of symptoms, infection location, and antibiotic use were then analyzed with a chi-square test. A *p* value less than 0.05 was considered statistically significant.

## 3. Results

A total of 94 children (33 girls, 61 boys; mean age 7 years) with orofacial infection visited the hospital during the study period. Most of the patients (53 cases) were children aged 2–14 years.

Odontogenic infections accounted for all cases in this study. Before swelling appeared, the clinical symptoms included frequent toothache, less common trismus, and fever. The most common cause of odontogenic infection was dental caries (88%). However, in 25 (12%) cases the type of disease was not grouped under any of the above categories (conditions such as acute necrotising ulcerative gingivitis (ANUG), gingival abscess, referred to pain in the teeth secondary to maxillary sinusitis, anticipated infections in traumatic dental extractions or infective endocarditis prophylaxis).

Table 1 summarized the study findings such as infection sources generally involved the primary posterior teeth (84%). The most commonly affected tooth was the primary first molar (34%), followed by the primary second molar (31%). The mandibular primary posterior teeth were more commonly affected than the maxillary primary posterior teeth (54.4% versus 45.6%). Extra-oral swelling was present in 64% of patients. The upper face was more commonly affected than the lower face (55.5% versus 44.5%) but that didn't reach to statistical differences. Dental pain was noted in 95% of children, with pain preceding the facial swelling. However, only 83% of children were taking analgesics. In 60% of children, the size of the swelling over the 24 h prior to presentation had been increasing. Treatment modalities included various antibiotics (singly or in combination) and dental procedures (Table 1). The most common treatment was antibiotic therapy, which was used in 87 patients (93%). The most commonly prescribed antibiotic was penicillin, singly in 78 cases and in combination (i.e. penicillin plus metronidazole) in nine cases. Seventy-four patients needed surgical extraction, 12 had root canal treatment, eight required incision and drainage, and in one case periodontal treatment was performed. Of the 94 patients included in this

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