CLINICAL EVALUATION METHODS OF ODONTOGENIC PHLEGMONS IN PEDIATRIC PATIENTS

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Abstract

This study explores the clinical characteristics and evaluation methods of odontogenic phlegmons in pediatric patients. Odontogenic phlegmons—rapidly progressing, diffuse purulent inflammations of the soft tissues—are frequently encountered in the maxillofacial region of children due to the high prevalence of untreated dental infections. The immature immune response and anatomical features in children often lead to more rapid progression and higher risk of systemic complications. This article presents findings from a clinical study conducted on 54 pediatric patients aged 3 to 15 years, focusing on the localization, clinical presentation, diagnostic parameters, and assessment criteria used to classify the severity of the condition. Based on clinical, laboratory, and radiological data, a comprehensive approach to evaluate and manage odontogenic phlegmons in children is proposed. The implementation of these methods in clinical practice can significantly improve early diagnosis, guide treatment strategies, and reduce complications.

Keywords: Odontogenic phlegmon, pediatric dentistry, purulent inflammation, clinical evaluation, diagnostic methods, facial cellulitis, soft tissue infection

1. Introduction

Odontogenic infections are among the most common causes of maxillofacial inflammatory diseases in pediatric patients. If not managed timely, these infections can lead to cellulitis or phlegmons, particularly in soft tissue spaces surrounding the oral cavity. Phlegmon is characterized by rapidly spreading purulent inflammation without clear encapsulation, posing a high risk for systemic infection, airway obstruction, and in rare cases, mediastinitis or sepsis.

In children, factors such as underdeveloped immunity, poor oral hygiene, and difficulties in articulating symptoms make early diagnosis challenging. Therefore, the development of structured clinical evaluation methods is crucial to identify the severity of the condition and initiate timely interventions.

2. Materials and Methods

A prospective clinical study was conducted at the Pediatric Dentistry Department of the Republican Scientific Center between January 2023 and March 2024. The study

included **54 children aged 3 to 15 years** diagnosed with odontogenic phlegmon. Informed consent was obtained from the parents or guardians of all participants.

Diagnostic Protocols Applied:

- Clinical examination (pain, swelling, fever, trismus)
- Blood analysis: complete blood count (CBC), erythrocyte sedimentation rate (ESR), C-reactive protein (CRP)
- Radiographic imaging: periapical X-ray and orthopantomogram
- Ultrasound (USG) to detect fluid accumulation in soft tissues
- Microbiological analysis of pus (in surgical cases)

The patients were grouped based on the **time of diagnosis** (early <24 hours vs. delayed >24 hours) and **anatomic location** of phlegmon (submandibular, buccal, pterygomandibular, sublingual).

3. Results

Out of the 54 patients:

- **62%** presented with **submandibular** phlegmons
- **24%** had **buccal space** involvement
- **9%** with **pterygomandibular** involvement
- **5%** had **sublingual** phlegmons

Clinical Features Observed:

- Facial swelling: 100%
- Severe localized pain: 96%
- Restricted mouth opening (trismus): 65%
- High fever (>38°C): 78%
- Enlarged and painful regional lymph nodes: 82%

Laboratory Findings:

- Elevated WBC count (>12,000/mm³): 88%
- ESR >30 mm/h: 71%
- CRP >40 mg/L: 74%

Microbiological Results:

- *Streptococcus pyogenes* and *Staphylococcus aureus* were the predominant pathogens.
- Anaerobic bacteria were also identified in 21% of cases.

Treatment and Outcomes:

- Early-diagnosed cases (n=31): responded well to antibiotics and drainage
- Late-diagnosed cases (n=23): required surgical intervention and longer hospitalization (average 6.8 days)
- No mortality was observed, but 4 cases developed localized complications

4. Discussion

Odontogenic phlegmons in children tend to progress faster than in adults due to thinner fascial planes, richer vascularization, and less resistance in connective tissues. Early recognition of key symptoms—facial asymmetry, swelling, and trismus—is critical for initiating timely treatment.

The study suggests that **clinical evaluation should be multifactorial**, integrating patient history, clinical examination, and paraclinical tests (CBC, ESR, CRP, USG).

A **proposed severity assessment scale** includes:

- Clinical symptom score (0–10): based on pain, swelling, fever, trismus
- Laboratory index score (0–10): based on WBC, ESR, CRP
- Imaging and USG findings: presence of hypoechoic or anechoic fluid collections

This scoring system can aid in decision-making regarding outpatient vs. inpatient care and surgical vs. conservative treatment.

5. Conclusion

Odontogenic phlegmons in pediatric patients are a serious clinical condition requiring prompt diagnosis and appropriate management. This study underscores the importance of a comprehensive evaluation approach that includes clinical, laboratory, and imaging findings. The proposed assessment method allows for accurate classification of severity and timely intervention, which is essential for reducing the risk of complications and ensuring faster recovery. Continued awareness among pediatricians and dental professionals is vital to improving outcomes in such cases.

6. References

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