Clinical aspects, diagnosis and treatment of the phlegmons of maxillofacial area and deep neck infections

Liudmila Krautsevich, Oleg Khorow

Department of Otolaryngology and Stomatology, Grodno State Medical University, Belarus
Head: O. Khorov

Summary

Introduction. The problem of maxillofacial and neck tissue inflammatory diseases constantly draws attention of otolaryngologists and maxillofacial surgeons in association with steady frequency of pathology. Despite a modern antibiotic therapy, there still exist cases in which an initial delay in diagnosis and treatment may result in a life-threatening situation. Material and methods. We have analyzed a clinical picture of 219 patients aged from 5 up to 91 years. The patients have been distributed according to the spread of purulent process and the laboratory research data into the following groups. Results and discussion. In inoculations from a wound during the primary surgical treatment in 67.6% of patients 1 microorganism has been revealed, in 7.9% – 2 microorganisms, in 5% – 3 and more microorganisms, in 19.4% of patients microorganisms have not been revealed. The most frequent cultures extracted from wound contents, were staphylococci and streptococci (61.2%). The presence of mixed (aerobic and anaerobic) microflora in the inflammation center has been marked recently. We have analyzed 64 MRI and X-CT at suspicion on diffusion of purulent process in deep neck cellular space. In 52 patients the process was localized within the limits of neck spaces and in 12 patients – the pyoinflammatory process extended on mediastinum though the clinical suspicion on mediastinitis was only in 10 patients. Conclusions. The treatment of maxillofacial and neck pyoinflammatory diseases and their complications remains a complex and difficult problem. Alongside with clinical methods of diagnosis of maxillofacial and neck pyoinflammatory diseases it is necessary to use accessory methods such as X-CT and MRI which clinical-diagnostic efficiency is very high. An antimicrobial therapy plays a significant role in the treatment of maxillofacial phlegmons. Antimicrobial regiments have been recommended and should cover the polymicrobial etiology.

Key words: phlegmons of maxillofacial area; deep neck infections; peritonsilar abscess; pharyngeal abscess; dental infections

INTRODUCTION

The problem of maxillofacial and neck tissue inflammatory diseases constantly draws attention of otolaryngologists and maxillofacial surgeons in association with steady frequency of pathology, the increased number of serious clinical courses of infection sometimes with atypical clinical manifestations, and also due to a prolonged course of the disease[4]. The phlegmons of the face and neck are considered to be the most severe. They are caused by complex anatomical and topographical features of the given area, fast spread of the inflammatory process in the cellular spaces with the development of mediastinitis and generalization of the infection [5, 6, 8]. Despite a modern antibiotic therapy, there still exist cases in which an initial delay in diagnosis and treatment may result in a life-threatening situation [12].

The variety of the cause and effect factors accounting for this fact is connected with modern social and ecological conditions, the decrease of anti-infectious resistance of a macroorganism, the qualitative biological properties change of microbiota under the influence of unreasonable antibiotics intake, hormonal drugs and other medicines, the increased number of patients with a background pathology. The maxillofacial and neck phlegmons are accompanied by endogenous intoxication that leads to homeostasis disturbance, disorder of the activity of vital organs and body systems of a patient. The most significant endogenous intoxication is shown in patients with progressing phlegmons of the face and neck.

Autorzy nie zgłaszają konfliktu interesów.
Nowadays significant success in the treatment of maxillofacial and neck phlegmons have been achieved and the main principles of surgical and medication treatment have been grounded. However their efficiency, as well as the efficiency of the applied local methods and means, still doesn’t provide an adequate positive effect. In this connection, the search for other more effective methods of treatment of face and neck phlegmons and their complications is constantly conducted. For practical work it is extremely important for a maxillofacial surgeon and otolaryngologist to have objective criteria of estimation of the patients’ condition with purulent inflammation, including the possibility of predicting clinical course of the disease that is necessary for a proper choice of a therapeutic approach.

Abscesses and phlegmons of cellular spaces of neck are usually secondary diseases. The main causes for their manifestation are tonsilar and pharyngeal and dental infections [3].

Economic expenses for treatment of such patients are extremely high, but in spite of it, an outcome of treatment is rather uncertain even after an intensive treatment with the use of expensive preparations and methods.

**MATERIAL AND METHODS**

We have analyzed a clinical picture of 219 patients aged from 5 up to 91 years. The patients have been distributed according to the spread of purulent process and the laboratory research data into the groups.

1. Suppurative process within the limits of one anatomic area – 155 (70.8%);
   - odontogenic infections (submandibular, masticator space, parapharyngeal and other cellular spaces) – 92%;
   - retropharyngeal, peritonsillar, parapharyngeal space infections – 8%.
2. Suppurative process in the cellular space of the patient’s neck – 52 (23.7%).
3. Suppurative process in the mediastinum 12 (5.5%).

The period of time between the beginning of the disease and the admission to hospital was 4.5 ± 0.6 days.

The reasons for visiting the doctor were the following: the patients didn’t feel well, they had a high temperature, pains, dysphagia, respiratory impairment.

The background pathology (heart, kidneys, liver diseases, tuberculosis, diabetes, chronic alcoholism) were detected in 86 patients (39.3%).

The social and professional status of the patients should also be noted. Generally the patients were workers or unemployed. The majority of the patients were able-bodied aged from 20 till 58 years.

Physical examination revealed a slight swelling, the asymmetry of the maxillofacial area, the asymmetry of the face and neck, trismus. A complete blood cell count, blood chemistries, clotting profile (especially in necrotic processes), the biochemical blood analysis and the analysis of acid-alkaline balance in severe patients were carried out. The patients were examined by the related specialists: the thoracic surgeon, the neurosurgeon, the ophthalmologist, the therapist, the anesthesiologist.

While diagnosing the cause of the process one should pay attention to the connection between the manifestation of inflammatory process, a bad tooth and the presence of chronic or acute tonsillitis, especially when it is necessary to differentiate etiologic factors of inflammations. The orientation only on clinical data can’t provide early diagnostics of mediastinitis. The use of accessory diagnosis techniques play a very important role. For diagnostics of pyoinflammatory diseases of maxillofacial area radiological techniques, especially lateral neck radiography are applied. Direct and lateral neck radiographic examinations reveal expansion of retropharyngeal spaces shadow, the presence of gas in soft tissues and in retropharyngeal space. Chest radiographic examination in a direct projection allows to determine the widening of mediastinum, with obscure silhouette. In a lateral chest radiography the retrosternal space shadowing is revealed. At early stages of mediastinitis X-ray data appear to be of little importance. The information value of lateral neck radiographic examinations for the diagnostics of phlegmons is 83% [7]. X-CT (radiologic computed tomography) and MRI (magnetic resonance imaging) have been widely used recently. High information value of X-CT, especially when local signs of inflammatory process are expressed indistinctly, is highlighted in literature [10, 11, 13].

**RESULTS AND DISCUSSION**

We have analyzed 64 MRI and X-CT at suspicion on diffusion of purulent process in deep neck cellular space. In 52 patients the process was localized within the limits of neck spaces and in 12 patients – the pyoinflammatory process extended on mediastinum though the clinical suspicion on mediastinitis was only in 10 patients.

X-CT and MRI research gives an opportunity to a level-by-level image of high quality by means of
a simple technique. With the help of this research we can determine localization and prevalence of a purulent process, and also a technique of the surgical interventions based on the results of this research (figs. 1, 2). The application of the specified examinations gives an opportunity to determine leakages, and also to exclude not always reasonable major surgical interventions in the localized processes. According to our observations the sensitivity of MRI and X-CT research has made 100%.

The urgent operative intervention is the basis of the maxillofacial and neck phlegmons treatment, which consists in the opening of maxillofacial and deep cellular neck space phlegmons under general anesthesia, active drainage and sanation of the centers of the chronic infection, being the cause of inflammatory process. All the patients with this pathological entity require attention to the airway and a third of them require immediate nasotracheal intubation or tracheotomy with topical anesthesia. Tracheotomy must be done only if it isn’t possible to intubate with an unstable airway [9]. Active surgical treatment of purulent processes is pathogenicly proved and practically justified, as it promotes the decrease of mortality and good functional results. In our clinic we adhere to a view of wide opening of neck spaces with the use of preventive expansion of drainaged interfascial compartment. We drain wounds after operation by means of tubular drainages and active aspiration, and rubber-gauze tampons with antibacterial preparations. In any case we don’t suture up wide incisions of tissue.

An antimicrobial therapy plays a significant role in the treatment of maxillofacial phlegmons [1, 2]. The success of antibacterial therapy to much extent depends not only on high efficiency of an applied preparation, but also on microbial sensitivity to it. Antimicrobial regiments have been recommended and should cover the polymicrobial etiology.

In inoculations from a wound during the primary surgical treatment in 67.6% of patients 1 microorganism has been revealed, in 7.9% – 2 microorganisms, in 5% – 3 and more microorganisms, in 19.4% of patients microorganisms have not been revealed. The most frequent cultures extracted from wound contents, were *staphylococci* and *streptococci* (61.2%). The presence of mixed (aerobic and anaerobic) microflora in the inflammation center has been marked recently. The synergism of aerobes and anaerobes leads to the increase of microflora virulence and enables an aggressive course of an inflammatory process, fast dissolution of tissue and heavy intoxication. It is aggravated with the absence of timely laboratory acknowledgement. Quite often, anaerobic microorganisms are not revealed by results of microbiological research, though according to clinical data during incisioning and drainage of maxillofacial and neck phlegmons we see all the signs of the anaerobic infection.

Delayed diagnosis of mediastinitis in necrotic neck phlegmons is explained by the features of clinical manifestation of unclostridial anaerobic neck infection – the absence of characteristic signs of a usual inflammatory process, while the anaerobic infection extends down, damaging mediastinum. It is also necessary to consider the condition of local and general immune systems of an organism, especially in the generalized pyoinflammatory processes and their slow chronic manifestations.
The presence or absence of concomitant pathologies influences the severity of maxillofacial and neck phlegmons course. The following pathologies have been revealed in the patients taking part in the experiment: 18.3% have chronic alcoholism, 11.9% have cardiovascular insufficiency, 4.1% have diabetes, 3.7% – kidneys-hepatic insufficiency.

CONCLUSIONS

The treatment of maxillofacial and neck pyoinflammatory diseases and their complications remains a complex and difficult problem. We have to solve it by carrying out a complex of actions influencing various stages of inflammatory process patogenesis, taking into consideration individual peculiarities of an organism. Alongside with clinical methods of diagnosis of maxillofacial and neck pyoinflammatory diseases it is necessary to use accessory methods such as X-CT and MRI which clinical-diagnostic efficiency is very high.

The key factor, affects the outcome of the treatment, is an immediate and properly executed operative intervention and the tactics of postoperative management.

Such methods as extracorporal detoxication, oxygenobarotherapy, immunocorrection therapy should be widely used.

So, medical rehabilitation actions should be carried out in accordance with an infection, a phase and localization of inflammatory process, peculiarities of the general and local manifestations caused, on the one hand, by properties of the causative agent and on the other hand – by the condition and reactivity worth of a patient.

Similar tactics of medical-diagnostic activities allows to reduce terms of d-bridement and healing of wounds, and also positively affects duration of general medical rehabilitation.

REFERENCES


The post address:
Luidmila Krautsevich
Department of Otolaryngology and Stomatology,
Grodno State Medical University
Gorkogo 80
230009 Grodno, Belarus

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