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DEEP NECK INFECTIONS IN THE GERIATRIC POPULATION - LITERATURE REVIEW

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ABSTRACT

Introduction and purpose: The aim of the study was to present and briefly discuss the causes of infections of deep neck tissues in geriatric patients. The issue of such factors as multiple diseases, surgical and dental procedures or pharmacotherapy in the geriatric population, which have a significant impact on the course of infection, was discussed.

Material and Methods: PubMed, ClinicalKey, and ClinicalTrials.gov were searched for material discussing the course of deep neck tissue infections in the senior population. The works and research from the years 2014-2026 were used, searching for terms such as "deep neck infection", "deep neck infection elderly", "deep neck infection geriatrics", "DNI elderly", "DNI geriatrics", "deep neck infection" age ". The aim was to show the course of DNI in the geriatric population and what mechanisms influence the course of the infections in this age group.

Results: Despite the fact that infections of deep neck tissues occur in all age groups, the geriatric population is particularly vulnerable to their aggressive course due to the presence of numerous risk factors, such as taking immunosuppressive drugs, lowered immunity or the presence of comorbidities.

Conclusions: There are problems with the diagnosis and treatment of DNI, especially in the elderly population, where the course of these infections may be different than in other age groups. Improper management may lead to health and life-threatening complications. The role of oral health prophylaxis is also very important, and it often does not reach geriatric patients sufficiently.

KEYWORDS

Deep Neck Infection, Dentistry, Geriatrics

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Introduction

Currently, most infections in the head and neck region are caused by dental issues. These infections are typically difficult to diagnose and progress rapidly, leading to necrosis of subcutaneous tissue and fascial compartments. They are associated with a high mortality rate, and early diagnosis and surgical intervention are crucial. This group of infections can be generally classified as deep neck infections (DNI) [1,2,3]. In addition to a clinical assessment of the patient's condition, diagnosis is based on imaging studies and laboratory tests used to assess the severity of the infection and detect possible complications such as mediastinitis, internal jugular vein thrombophlebitis, and sepsis. Among imaging tests used in the diagnosis of DNI, computed tomography has a sensitivity of 80%, ultrasound has low sensitivity and specificity, but can be used to rule out an abscess. Early surgical intervention limits the spread of necrotizing fasciitis of the neck. Moreover, performing a tracheostomy facilitates wound care and does not preclude the use of a skin graft [1,4,5,6]. The optimal treatment for DNI is broad-spectrum antibiotic therapy and repeated surgical interventions to remove necrotic tissue; this is the most commonly used method. Performing a tracheotomy appears justified given the need for repeated, difficult intubation, especially in the geriatric patients. An alternative approach is the use of subcutaneous drains; good results and complete recovery have been achieved even in patients with multiple comorbidities and those with alcohol dependence. For both older and younger people, the main factor leading them to turn to alcohol is an inability to cope with the situation they find themselves in. For older people, however, this problem is somewhat different. In particular, those who have transitioned from full-time work to retirement are at risk [2,7,8,9].

Public Health Challenges and DNI

Another extremely challenging factor in the treatment of deep tissue infections of the neck in the geriatric population is increasing antibiotic resistance. Even healthy people who rarely take antibiotics and are in good physical condition can experience complications if they become infected with antibiotic-resistant bacteria. Anyone, at any stage of life, can be affected by antibiotic resistance. Already, more than 35,000 people die each year in Europe from infections caused by antibiotic-resistant bacteria. The causes of growing antibiotic resistance include: excessive and inappropriate use of antibiotics, stopping antibiotic treatment once symptoms subside, overuse of antibiotics in veterinary medicine, insufficient use of microbiological diagnostics in medicine, which would allow for targeted therapy and insufficient methods for preventing infections including level of hand hygiene both at medical workforce and patient community. [5,6,10,11,12,13,14]

The most common sources of infection in the elderly were dental and salivary foci, whereas in the adult group, the most common sources of deep neck infections were dental and tonsillar foci. As numerous publications have shown, treatment in the geriatric population was associated with longer hospital stays and both surgical and medical complications, which consequently resulted in higher costs for diagnostic and therapeutic procedures. Another important factor is the high prevalence of multiple chronic conditions in geriatric populations and, consequently, polypharmacy and the risk of adverse effects and drug interactions. Diabetes mellitus has been identified as the most common systemic disease associated with deep neck infections. Diabetes has been linked to a higher incidence of infection spreading to multiple sites, complications, and an inability to determine the pathogenesis. In patients with diabetes and deep neck tissue infections, multidrug-resistant bacterial strains, such as *Klebsiella pneumoniae*, are common [15,18,20,21]. Moreover, descending necrotizing mediastinitis is a life-threatening condition spreading to the pretracheal, perivascular, retrocardiac, and/or prevertebral spaces, typically without involving the esophagus. Cases have been reported of deep neck abscesses that have complicated into purulent esophagitis and mediastinitis. Recent studies also clearly show that older adults metabolize alcohol and other substances somewhat differently than younger people, this is due to physiological changes in liver function. As a result, seniors and the elderly are even more vulnerable to the adverse effects of alcohol consumption. [21,22]

DNI in Aging Societies

In geriatric departments (or other departments, but only for patients aged 60 or 65 and older), a Comprehensive Geriatric Assessment (CGA) is conducted. Its purpose is to take a holistic approach to the problems of older patients. It assesses the extent of existing conditions and helps determine priorities for treatment, rehabilitation, and care - including the dental one. As part of the COG, the physician assesses, among other things: vision and hearing, skin condition, feelings of loneliness and depression, pain, the relationship between adverse effects and medications being taken, the extent of memory impairment and mobility issues family and social circumstances, for example the loss of a family member, support from a family member in care, and the ability to care for oneself. Palliative and hospice care aims to relieve pain and bothersome symptoms of illness when curative treatment is no longer effective as it maintains the patient's quality of life at the highest possible level [22, 23].

Recently, the number of people in the elderly age group has been increasing around the world, which is associated with their heightened dental needs. Given the specific characteristics of patients in this age group, it is advisable to adopt an appropriate approach and to carefully consider the variety of pathological changes that may occur in the hard and soft tissues of the oral cavity. The images of old age portrayed by the media are of great importance here, those responsible for this messaging should pay attention to how they typically describe older adults and in what contexts. It is important to consider whether the selection of content, articles, and photos effectively conveys information about health promotion among the geriatric population [17,19,24,25].

Conclusions

It is evident that dentistry in many countries has reached a critical juncture. Decisions made by the institutions responsible for shaping the healthcare system not only fail to resolve existing problems but often exacerbate them, which particularly affects geriatric patients. The most visible issue is the underfunding of dental services within public healthcare systems, which for years has remained at a level that does not allow for maintaining treatment standards or professional development. Financial and organizational shortcomings also have consequences for the education of future dentists who often lack of geriatric training in their curricula. Any shift in emphasis from prevention to curative treatment results in higher healthcare costs and a greater social burden in the future [23,25].

The conclusion drawn from the above review is that further research is needed on the geriatric population with regard to the head and neck organs, both in health and disease, in order to better understand their mechanisms of action and to utilize them in clinical practice as an effective therapeutic tool. It is essential to have interdisciplinary teams comprising otolaryngologists, dentists, maxillofacial surgeons, and public health specialists who design preventive programs based on evidence-based medicine and tailored to the needs of older adult populations in different regions of the world.

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