

DIFFERENCES IN CLINICAL MANIFESTATIONS OF ODONTOGENIC AND NON-ODONTOGENIC LYMPHADENITIS

ODMIENNOŚCI W OBJAWACH KLINICZNYCH ZAPALENIA WĘZŁÓW CHŁONNYCH POCHODZENIA ODONTOGENICZNEGO I NIEODONTOGENICZNEGO

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ABSTRACT

Introduction: The acute suppurative lymphadenitis and its chronic forms prevail in the structure of inflammatory processes of the maxillofacial area in children. High incidence of the acute and chronic forms of lymphadenitis of both odontogenic and nonodontogenic origin is caused by the anatomophysiological peculiarities of the structure of the teeth and soft tissues in children in different age periods.

The aim: The paper was aimed at comparison of clinical manifestations of the acute and chronic odontogenic and non-odontogenic lymphadenitis.

Materials and Methods: The results of the checkup and 5-year-period treatment of 324 children with the acute and chronic forms of the nonspecific lymphadenitis of the maxillofacial area have been used. Four study groups have been formed. The first and the second group included 16 (38,0%) and 26 (62%) children with the acute submandibular suppurative lymphadenitis of the odontogenic and nonodontogenic origin, respectively. 12 (35,3%) and 22 (64,7) individuals with chronic hyperplastic lymphadenitis have been assigned to the third and the fourth group, respectively.

Results: The clinical course of the acute submandibular suppurative lymphadenitis of various etiologies is different. Rapid development of the local clinical manifestations with its dramatic progressing is specific to odontogenic lymphadenitis. Its clinical course is characterized by the more apparent overall response of the body, increase of the body temperature, and these symptoms are more manifested than in nonodontogenic lymphadenitis.

The clinical course of chronic hyperplastic lymphadenitis is accompanied by the enlarged regional lymph nodes of various size and shapes and dense-elastic consistency. Clinical manifestations of nonodontogenic lymphadenitis were less apparent and the overall state was normal in both forms of lymphadenitis.

Conclusions: Nonodontogenic lymphadenitis prevailed in all nosological forms of the acute and chronic nonspecific lymphadenitis.

KEY WORDS: children, maxillofacial area, lymphadenitis, clinical manifestations

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INTRODUCTION

Inflammatory diseases take one of the leading places among the pathological processes occurred in the soft tissues of maxillo-facial area, since, according to publication data, the number of patients of this group accounts for 27,2% -54,0% in the hospital surgical units whereas in out-patient conditions their share varies according to the age periods: 16% in the early childhood, 26% at the age of 4-6 years, 38% in children aged 7-12 years and 20% at the age of 12-15 years. Noteworthy, they have been found the most frequently at school childhood period due to the large share of dental caries lesions and its complications in the period of changes in bite [1, 2].

Importantly, the acute suppurative lymphadenitis and its chronic forms prevail in the structure of inflammatory processes in the maxillo-facial area in children, accounting for 30% of the total number of hospital patients. Generally, it accounts for 11% of the total number of children with purulent surgical pathology of different localization [2, 3, 4].

Notably, lymphadenitis is usually a secondary disease, since the lymph nodes serve as a filter for many harmful substances coming from the lymph, affecting the mechanisms of the protective barrier, and penetration of microorganisms from the surrounding tissues through regular, hematogenic and lymphogenic pathways can lead to their suppuration [5, 6, 7, 8].

Primarily, the teeth with dead and inflammatory pulp, as well as multiple nosological forms of periodontitis can be the atrium of infection. The abundant network of lymph vessels of the pulp and periodontium ensures the rapid lymphogenic proliferation of microbial agent and toxic products of tissues decay. Notwithstanding the clear presence of primary odontogenic focus, its contribution to the development of lymphadenitis has not been proved to date, making it difficult to diagnose the disease in terms of etiology [9, 10].

Considering the fact that lymphatic system of newborns and infants is morphologically and functionally imperfective, and reticuloendothelial cells are not able

to perform proper protective functions, children at this age deserve special care, since the frequency of diagnostic errors is quite considerable. The formation of the lymph nodes as full anatomic structure occurs within the first 3 years of life and exceeds their number in adults, which also affects their specific manifestations [2, 11].

Undoubtedly, all of them, regardless of the origin, are infectious in nature. It is believed that odontogenic microbial flora is the major etiological factor (96-98%). It proliferates from the tooth cavity in the aggravation of the tooth decay first into the apical periodontium and then through multiple small holes in the cortical plate of the alveolar socket into the medullary space of the alveolar ridge [2, 12, 13].

Remarkably, most of them are representatives of the normal microflora, vegetating on the cutaneous integuments and oral mucosa. In case of impairment of its integrity, lesions of the marginal parodontium tissues, as well as significant destruction of hard tooth tissues the bacteria penetrate into adjacent tissues. Some of them are killed immediately under the influence of specific factors and specific host defense. Others, on the contrary, adapt to the new conditions of coexistence and begin to multiply rapidly. It is noteworthy that the occurrence of "critical concentration" of the pathogen is required for the development of infectious-inflammatory process, the aggressiveness of which largely depends on its pathogenic properties [14, 15, 16].

One of the features of odontogenic lymphadenitis is that carious lesions of hard tooth tissues and their complicated forms cause the permanent antigenic load onto maxillofacial tissues, contributing to the formation of the foci of chronic infection. A specific delicate balance is set between them and a patient's body that can in a flash be broken due to the change in immunologic reactivity or increase in the virulence of the infectious agent [17, 18, 19, 20].

Thus, the high frequency of the acute and chronic forms of both odontogenic and non-odontogenic lymphadenitis is caused by the anatomico-physiological peculiarities of the structure of the teeth and soft tissues in children in different age periods. The increase of biological aggressiveness of microorganisms, level of sensitization and immunological capacity determines the features of their clinical course at the general and local levels, predisposition to chronicity, affecting the outcomes of the disease.

THE AIM

The study was aimed at the comparison of the clinical manifestations of the acute and chronic forms of odontogenic and non-odontogenic lymphadenitis.

MATERIALS AND METHODS

The results of the 5-year period of examination and treatment of 324 children with the acute and chronic forms of nonspecific lymphadenitis have been studied. The classification according to P.I. Tkachenko has been used during

the group formation. While clarifying the patients' complaints the thorough attention has been paid to disorders of general condition (increased body temperature, fatigue, nausea), past history of the basic disease, the localization and nature of pain; pathological conditions that may influence the progress of the disease have been determined. General physical examination and study of the local status was of particular importance.

261 children have been assigned to the group of the acute suppurative lymphadenitis and 178 children have been assigned to the group with chronic hyperplastic lymphadenitis. Considering the fact that lymph nodes inflammation is mostly localized in the submandibular area in 127 cases (48,7%) in the acute form and in 92 cases (46,1%) in chronic form, 42 children (33,1%) with the acute inflammation and 34 children (41,5%) with chronic one, who belong to pre-school and school childhood age groups, have been involved into thorough scientific study.

Four observation groups have been formed subsequently. Group I and Group II was populated with 16 (38,0%) and 26 (62,0%) children with the acute suppurative submandibular lymphadenitis of odontogenic and non-odontogenic origin, respectively, each. 12 (35,3%) and 22 (64,%) individuals with chronic hyperplastic lymphadenitis have been assigned to Group III and IV.

RESULTS AND DISCUSSION

Children, assigned to Group I have experienced the severe acute pain and swelling in the submandibular area that disturbed them within a few hours of the last day, preceded by the occurrence of a continuous, gradually growing, intolerable pain in the area of the affected tooth, which dramatically increased in biting. 12 patients (75,0%) from the 16 ones have experienced the limited and painful mouth opening. In all patients the body temperature raised to 37,7-38,5°C. At the time of hospitalization the general condition of all children was accompanied by intoxication of different level of severity which was manifested by the weakness, moderate dryness of the oral mucosa, worsening of appetite and sleep disturbance. 6 patients (27,0%) showed satisfactory general condition.

Clinical manifestations of the disease were characterized by the rapid rise of the general signs of inflammation and progressive enlargement of one of the submandibular lymph nodes during the first day or even night. Sharp palpation tenderness of both the focus and adjacent soft tissues was noted, as well as the enlargement of individual and adjacent lymph nodes, though they were much smaller in size. In most cases, bundles of 2-3 nodes have been formed. In all patients cutaneous integuments above the projection of lymph nodes were strained and with the signs of mild hyperemia and pronounced collateral edema. Fluctuation in the focus of inflammation has been detected in all patients.

During examination of the oral cavity the "causal" teeth have been found, changed in color and with deep carious cavity connected with pulp cell, sounding of which was painless but percussion was sharply painful. Sometimes

pathologic Class I-II tooth mobility has been noted. Mucous membrane in the cervical area and the projection of the roots of "causal" tooth was hyperemic and edematous, painful by palpation; thickening of the mucous membrane with the traces of microscar and the presence of fistula has been noted. Radiographically the focus of bone tissue destruction with indistinct margins in the apical projection or bifurcations of the roots of a tooth has been found in all patients. The evaluation of the history of the disease and the results of the objective examination has established that it was the next aggravation of chronic periodontitis that caused the onset of suppurative inflammation in the lymph node.

In admission all patients with acute nonodontogenic suppurative lymphadenitis experienced the sharp pain in the anatomical area of the focus of inflammation. In all cases the onset of the disease was characterized by the emergence of gradually growing swelling and intensity of pain in the corresponding area, accompanied by the fatigue, worsening of sleep and appetite. The history of sick children showed the increase in body temperature to 37,3 – 37,8°C. In 14 children from 26 ones, the inflammatory process in the lymph nodes was accompanied by the exacerbation of chronic process of bronchial-pulmonary system and chronic tonsillitis, and in 5 children this coincided with manifestations of the acute respiratory viral infection. In 4 patients a minor deterioration of the general condition that was manifested by a moderate dryness of oral mucosa and limited opening of the mouth has been observed.

At the local level clinical manifestations were characterized by a gradual enlargement of the lymph node in the submandibular area during the 2-4 days. In hospitalization the acute palpatory tenderness was revealed, the center of induration at the place of localization of the focus of inflammation with minor collateral edema and limitation of the mobility of the lymph node itself has been noted. In all patients the skin over the lymph node remained unchanged in color and was tense and unfolded over the purulent focus itself. 8 patients (30,1%) have experienced a limited opening of the mouth, accompanied by painful sensations of different intensity. Fluctuation in the focus of inflammation was found in 14 cases (53,8%).

22 children with chronic hyperplastic odontogenic submandibular lymphadenitis have been under our observation. Chronic odontogenic foci, represented by the various nosological forms of chronic periadenitis by clinical signs were in remission. In 18 cases (81,3%) it was confirmed by the X-ray study of periapical tissues.

According to the results of observation the patients complained of the presence of enlarged, painless lymph nodes in the submandibular areas that have been existed for a long time. General condition was not deteriorated. In all patients the face was symmetrical with unlimited mouth opening. No signs of skin and oral mucosa lesions have been noted.

In all cases different number of round or oblong lymph nodes that were enlarged, with clear margins and tight-elastic consistency, painless by palpation, limited in mobility, not glomerated with adjacent tissues has been found. Their dimensions were within the range of 1-2 cm.

On the lower jaw examination of the oral cavity revealed one or two temporary and permanent premolars or molars affected by chronic periodontitis.

12 patients (Group IV) with chronic hyperplastic non-odontogenic submandibular lymphadenitis complained of the presence of enlarged lymph nodes in the submandibular areas and upper third of the lateral surfaces of the neck; general condition was not deteriorated. In all patients the face was symmetrical with unlimited mouth opening; cutaneous integuments and visible areas of mucosa were naturally pale-pink colored.

The subsequent examination revealed the presence of great amount of enlarged (up to 1-1,5 cm), painless, fluctuated lymph nodes with densely-elastic consistency, not glomerated with adjacent tissues, which were clearly visualized in the submandibular and adjacent anatomical areas.

CONCLUSIONS

Among all nosological forms of the acute and chronic nonspecific lymphadenitis non-odontogenic forms prevailed.

The acute suppurative submandibular lymphadenitis of the various etiologies is different in the nature of the clinical course. In their odontogenic origin, especially if they are accompanied by the acute exacerbation of chronic periodontitis of the "causal" tooth, the rapid development of the local clinical manifestations with their progressive growing can be noted. Its course is characterized by the more pronounced general reaction of the organism, increase in body temperature to 38-38,5°C, and these symptoms are more expressed than in non-odontogenic inflammation. In addition, a number of enlarged lymph nodes were considerably lower; they were larger in size, and local manifestations of inflammation had the visual signs of the presence of the periapical reaction of tissues, adjacent to the lymph nodes.

Progress of the chronic hyperplastic odontogenic lymphadenitis was accompanied by the presence of more enlarged regional lymph nodes of various sizes and forms of densely-elastic consistency than in their non-odontogenic origin, without signs of deterioration of the general condition in both forms of lymphadenitis.

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