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Diagnostic and treatment algorithm of chronic obstructive pulmonary disease in patients with pathological processes of the oral cavity

Key words: *chronic obstructive pulmonary disease, periodontitis, osteopenia, osteoporosis, diagnosis and treatment.*

Chronic obstructive pulmonary disease (COPD) with concomitant pathology is one of the most pressing medical and social issues around the world. It is due to the incidence rate, invalidization and lethality from both the main disease and from the concomitant pathologies. COPD leads to a decreased quality of life and to disability among the population. Besides that, COPD development gains its severity in the event of comorbidity [9, 12, 17, 22].

Many researchers devote their effort to study of the interdependence between the periodontal tissue disorders and systemic diseases. It was proven that there is a direct correlational dependency between the periodontal tissue disorders and COPD [27, 30, 31].

The respiratory and the digestive system have much in common. Anatomically and functionally, both systems are engaged by means of the oral cavity, while the respiratory system and the oral cavity diseases have common development factors like tobacco smoking and the microbial factor. Pathologic processes development in one of the systems has a direct effect on other systems, and the body as a whole [30].

However, due to lack of standard testing and diagnosis methods for COPD patients with concomitant pathologic processes of the oral cavity, no preventive and treatment measures for this combined pathology are being duly developed.

It has been established that in obstructive pulmonary disease patients a massive colonization of the respiratory ways by pathogenic and opportunistic pathogenic bacteria is taking place. Microbial contamination is found not only in the sputum, but also in the nose, the mouth and the oropharynx even with no indication of any clinical signs. Regular administration of high doses of inhaled gluco-corticosteroids as part of basic inhaled therapy works to deepen microbiocenosis disbalance of the mucous membrane of the respiratory tract, pathologic microbodies persistence which may complicate the course of the disease [1, 13, 17, 22].

Due to complex structure of the paradentium that combines different types of tissues, it may contain different sorts of diseases. Most frequently, these are inflammatory and dystrophic inflammatory processes. The inflammatory processes are often located in the gum tissues, thus receiving the name of gingivitis. In case of the pathologic process' proliferation throughout the entire set of the periodontal tissues, there develops a dystrophic inflammatory process also called generalized periodontitis (GP). This disease begins slowly, it progresses over years, it features destruction of the entire periodontal tissue complex [3, 7, 14, 30].

Periodontal damage eventually develops into a state where normal physiological stress on teeth results in a state of traumatic occlusion. These processes precondition progressive alveolar bone and periodontal soft tissue resorption [3, 7].

Development of this type of pathologic processes leads to increase in tooth mobility, and consequently – to the loss of teeth due to loss of tooth retaining tissues. Periodontal disease is very widespread, particularly in Ukraine their prevalence is as high as 90 %. Depending on the age and co-morbidity, the disease changes its structure. With equal prevalence rate, in the young-aged gingivitis prevails, while in people over 40 – it's generalized periodontitis. Such great spread of GP preconditions loss of considerable number of teeth, which is 5–10 times greater than that due to caries and its complications [3].

Periodontal tissue pathologic process development in COPD patients occurs in the event that the pathologic factors intensity prevails over the adaptation and protective capabilities of the periodontal tissue as well as due to decrease in the body responsiveness. All causative factors may be provisionally divided into two groups – local and general. The

following are local factors that influence the periodontal tissues conditions: dental deposits, pathologic microflora, primary traumatic occlusion, unsanitized oral cavity, continuous intake of high doses of inhaled gluco-corticosteroids (GCS), inadequate fillings, dentures, periodontal appliances, bad habits, incorrect lip and tongue frenum fold placement, etc. [3, 7, 14].

GP development depends on overall microbial contamination of the oral cavity, amount of dental deposits and their microbial concentration, hygienic status of the oral cavity. A leading role among the microbial agents of GP development belongs to gram-negative nonsporeforming hematolytic anaerobia *Bacteroides melaninogenicus*. The anaerobial bacteria group is an active producer of protein-degrading enzymes, including collagenolytic enzymes, hyaluronidase, chondroitin sulfatase. These enzymes act to break down collagen – the main periodontal tissue protein, glycosaminoglycan, that can be found in the connective tissue and bone cartilage. This leads to destruction of the connecting mechanism of the tooth and periodontal tissue in general and to increased tooth mobility [7, 30].

Pathogenic and conditional pathogenic types of α- and -hemolytic streptococci, *Staphylococcus aureus*, epidermal and saprophile staphylococci take an active part in inflammatory processes of periodontal tissue. Obligate and facultative anaerobes – *Treponema spp*, *Veillonella* spp, *Bacteroides* spp, *Fusobacterium* spp, *Corynebacterium* spp, *Candida* spp, *Actinomyces* spp cause purulent inflammation, neuro-trophic processes disorder, increased bleeding, increased transudation, slow-type allergic reactions, microvascular expansion, etc. [30].

Clinical and immunological features of GP development in COPD patients are pronounced dystrophic and destructive processes in periodontal tissue, high rate of alveolar bone height loss and manifestation of tooth loosening with considerable loss of clinical gum attachment, deep periodontal pockets and considerable degree of microbial contamination [13, 14, 30]. GP and its complications in COPD patients develop on the background of oral cavity local immunity suppression evident from the decreased levels of IL-1β and sIgA in combined saliva when compared against individuals of the same age and gender without somatic pathology [13].

An additional adverse factor suppressing the immunity response in COPD is administration of inhaled GCS that on one side have express anti-inflammatory effect, but on the other side suppress antibodies production and necessary local defense factors synthesis, which has a direct impact on microflora of the oral cavity and the tracheobronchial tree [13].

Therefore, indications of wide spreading and high intensity of tooth caries, pathologic periodontal processes on the backdrop of inadequate oral cavity hygiene make up a risk group for dental disease complication development as well as potentially adverse impact on the overall body state of the patient and COPD development due to the infection spread through the tracheobronchial ways and formation of pockets of odontogenic infection within caries recesses and paradentium, which exacerbates development of the chronic systemic inflammation [14].

Inasmuch, oral cavity mucus membrane protection is accomplished thanks to specific and non-specific defense mechanisms as well as specialized structures. Along with that, the cytokine regulation plays its big role. Inflammation develops in response to tissue damage and their pathogenic penetration involving pro-inflammatory cytokines that include the following: IL-1, TNF-α, IL-6, IL-8, chemokines. They cause endothelium activation that leads to adhesive molecule expression increase and is accompanied by low-molecular inflammatory mediators – histamine, prostaglandins responsible for adequate inflammatory reaction development. The cytokines produced during the inflammatory process damage the periodontal tissue and lead to alveolar bone resorption, which, in turn, activates their synthesis by the immunocompetent cells, and as a result, this causes further inflammation chronization. Besides, IL-1 has the most harmful effect in periodontal disorders [13].

In the event of local defense reaction disorders, the inflammatory reaction spreads, cytokine synthesis rises, and they proliferate to the blood circulation and have their effect on the systemic level. In this case, the pro-inflammation cytokines impact virtually all body organs and systems, exacerbate systemic inflammation specific to COPD [8, 13].

Inflammation development in COPD is accompanied by oxidative stress and change in the amount of both the inflammation mediators and acute-phase proteins. C-reactive protein (CRP) plays an important part among the inflammation biomarkers.

In COPD patients, the highly-specific CRP serves as an independent cardio-vascular disease predictor and patient lethality; and an increase in its level serves as a negative prediction factor for bronchial obstruction progression and development of respiratory failure [8].

There is consensus no among the authors as to the orientation of the cytokine imbalance in COPD, however it has been universally accepted that the cytokine and the highly-specific CRP level estimation, viewed as systemic inflammation markers in various biological materials (serum, whole blood, cultural supernatants, etc.), deserve their rightful place among modern methods of immunodiagnosis for the given disease.

Therefore, the following should be attributed to the general periodontal pathologic processes development: severity of systemic inflammation in COPD, severity of bronchial obstruction, drop in physical activity and decreased physical exercise tolerance [5]. Occurrence of secondary systemic osteoporosis (OP) deserves special attention as a result of long-term hypoxia that occurs against a background of respiratory failure and drop of physical activity in patients with severe COPD, as well as administration of high doses of inhaled or systemic GCS [2, 26, 29].

The age of the patient at the time of occurrence of the disease is also an important factor. COPD is known to develop predominantly among mature and senior individuals – after 40 years of age [4], therefore secondary OP and GP in COPD develop against the backdrop of mineral metabolism involutional disorders, metabolic and immunologic disorders [5, 9, 13].

In developed countries, OP constitutes one of the main healthcare concerns. Foreign specialists consider the disease

to have already reached epidemic proportions. The main aspect that makes it stand out among other locomotor system disorders is nearly complete absence of any clinical manifestations up until the fracture. Bone fractures in COPD patients who have secondary OP are observed less frequently due to graduate development of cardiopulmonary failure and reduced physical activity. In this patient contingency, therefore, OP is often left undiagnosed, and consequently the concomitant OP is left untreated [4].

It has been established that OP affects one-third to one-half of all postmenopausal women. Bone tissue loss in women begins at the age of 35–40 and amounts to 0,5–1 % per year, becoming more severe after the menopause. Within the first 3–5 years after the menopause, this parameter goes up to 3–7 % per year [6].

As reported by V. V. Povorozniuk (1997–2000), mineral density of the compact bone tissue in women starts reducing significantly after the age of 55, and in men – after 70. In the course of study of structural and functional state of the bone tissue of 1840 individuals between the age 20 and 89, osteoporosis was detected in 13 % of women and 3 % of men in the age group of 50–59; in 25 % of women and 10 % of men in the age group 60–69; in 50 % of women and 22 % of men in the age group 70–79; in 53 % of women and 20 % of men in the age group of 80–89 [15].

A series of researches by I. P. Mazur and V. V. Povorozniuk (1996–2007) established a correlation between the structural and functional condition of the periodontal tissue and the bone system among individuals of different age and gender in various regions of Ukraine. It has been proven that bone tissue mineral density reduction in systemic OP is accompanied by advancement of dystrophic and resorptive processes in periodontal tissues, destruction of interalveolar bone partitions, bone organic matrix remodeling processes disruption [7, 15].

In the works by Jeffcoat M. K. [23–25], osteopenia and OP are indicated as risk factors for periodontal diseases in both women and men. Bone mineral density reduction may have adverse effect on the state of the periodontal tissue. Age-induced bone tissue reduction of the skeleton, bone tissue metabolism disorders accelerate the rate of alveolar bone resorption, which causes premature loss of teeth [5, 7, 15].

The issue of bone system metabolic disorders influence on the course of development of periodontal diseases remains scarcely covered in today's scientific literature, while the study results – contradictory [7, 19]. Thus, examination of the bone tissue mineral density (BTMD) remains the most likely study method for the structural and functional state of the bone system [15, 18, 20].

Quantitative computer densitometry (3D QCT) is the most informative and reliable osteoporosis detection method for today. This is the only method that makes it possible to determine the actual sponge bone tissue density with high accuracy and reproducibility and to obtain visual information on its structure [16, 28].

Therefore, in the studies conducted over the recent years great attention has been given to the connection between COPD with OP and periodontal tissue pathological processes, while scientific research results in the area of algorithm development for COPD diagnosis and treatment in patients with oral cavity pathologic processes remain of acute importance.

Medical specialists from various fields should be involved in search for solutions to this challenge (family practitioners, pulmonologists, dentists, and in the event of secondary systemic OP and high risk of pathological fracture or its presence – orthopedic traumatologists as well). Therefore, for the purpose of early detection and treatment of COPD, oral cavity pathological processes and secondary OP, the following algorithm developed on the basis of results of the conducted research [4, 5, 8, 12–14, 28] and according to data provided in the literature sources [1, 6, 9–11, 22, 23, 30] is recommended.

Family doctors constitute the first point of reference for the patients with early symptoms of this pathology. The following patients should suspect COPD:

- Over 35 years of age.
- Smokers, at present or in the past.
- Patients with any of the following symptoms: dyspnea, chronic cough, regular sputum discharge, frequent winter bronchitis, pulmonary rattling.
- Without symptoms specific to bronchial asthma.

If COPD is suspected, the patient is referred to a pulmonologist for final diagnosis as well as to a dentist for identification of any oral cavity pathological processes. In the event that, instead of the family doctor, it is the dentist who first identifies pulmonary symptoms that raise COPD suspicions in the patient's health history, the doctor's actions should be as follows. Alongside the treatment (Order of the Ministry of Healthcare of Ukraine dated 23 November 2004 № 566 «On Approval of the Procedure for Rendering Medical Assistance to in the Fields of «Orthopedic Dentistry», «Therapeutic Dentistry», «Surgical Dentistry», «Orthodontics», «Child Therapeutic Dentistry», «Child Surgical Dentistry» [11]) for the mouth cavity pathology, the patient is referred to a family doctor for consultancy and testing. If the family doctor confirms the pulmonary symptoms that raise COPD suspicions, then a consultancy with a pulmonologist is scheduled for final diagnosis confirmation.

In the event that on the basis of clinical and X-ray data indications a dentist diagnoses GP, however, without any pulmonary symptoms, the patient should obtain treatment for GP and its complications under the respectful Order [11], rehabilitation measures should be take and further OP testing prescribed.

COPD diagnosis is confirmed if spirometry results show $FEV_1/FVC < 0,7$. The FEV_1 value is important to know for determination of severity of bronchial obstruction. Bronchial obstruction reversibility test is usually not required for planning of initial therapy. If COPD diagnosis is confirmed, the patient remains under the observation of the family doctor (additional pulmonologist consultancies are prescribed, if necessary), treatment and rehabilitation measures are taken under the Order of the Ministry of Healthcare of Ukraine dated 27 June 2013 № 555 «Unified Clinical Procedure of Primary, Secondary (Specialized), Tertiary (Highly Specialized) Medical Assistance and Medical Rehabilitation, «Chronic Obstructive Pulmonary

Disease» [9]. If the diagnosis is not confirmed, the patient continues observation with the family doctor under the COPD prevention program according to the respectful Order [9]. In the event of the oral cavity pathology detection, the patient receives simultaneous treatment by a dentist (periodontist) followed by regular check-ups [11].

Therefore, the comprehensive preventive measures, early identification and treatment of COPD and oral cavity pathological processes will have a positive impact on the epidemiological COPD and GP situation, will facilitate decrease in the secondary systemic OP.

All COPD and GP patients should be screened for OP. BTMD testing is recommended for the following patient categories:

• All COPD patients of the clinical groups B, C, and D [4].

• All patients with bronchial obstructive diseases who for over 6 months have been receiving oral GCS at the average dose of ≥ 7,5 mg/day with prednisolone [2, 21, 22].

• Post-menopausal women who have been receiving prednisolone at the dose of > 5 mg/day for over 3 month [2, 21, 22].

• Patients with bronchial obstructive diseases who have in their health history vertebral fractures or fractures in other locations associated with osteoporosis [2, 21, 22].

• Post-menopausal women who receive > 2 mg/day of inhaled beclomethasone dipropionate or its equivalent dose of inhaled GCS [2, 21, 22].

• All patients receiving frequent short therapy courses of high doses of oral GCS [2, 21, 22].

The following BTMD indicators in the lumbar spine or neck of the femur speak of OP [2, 10]:

• T-index < – 2,5 (2,5 standard deviation points lower than the average indicator in healthy young individuals of the same gender than in patients 19–69 years of age).

• Z-index < – 1 (1 standard deviation point lower than the independent indicator of the corresponding age and gender of the patient).

The T-index deviation in the range of 1 to – 2,5 standard deviation points below the average indicator in healthy young individuals of the same gender for patients 19–69 years of age.

COPD and GP patients with severe OP and pathologic fractures are subject to hospital care in specialized orthopedic and trauma departments of regional or city hospitals. Patients with OP verified by densitometry may remain under the care of their orthopedic-traumatology specialist at their local district policlinics. Besides the basic COPD therapy and GP treatment, additional anti-osteoporotic therapy is prescribed as well as rehabilitation measures under the Order of the Ministry of Healthcare of Ukraine dated 12 October 2006 № 676 «Clinical Procedure for Medical Assistance to Patients with Osteoporosis» [10]. The prescribed therapy consists of calcium supplements, group D vitamins (D2, D3), and basic anti-osteoporotic medications. First-line medications are biophosphonates and selective estrogen receptor regulators (SERM).

Pharmacological OP treatment in patients with COPD and GP is long-term, targeted at effective decrease of risk of fracture. Non-adherence to the treatment may lead to worsening of the disease. As of today, strontium ranelate and biophosphonates (alendronate, ibandronate, risendronate, zolendronate) are registered in Ukraine, which in Europe belong to the main group, as well as calcitonin and hormonal replacement therapy. All of these medications decrease the risk of vertebrae fracture. Some of these can decrease the risk of non-vertebra fractures and hip fracture.

It should be noted that COPD develops in individuals over 35–40 years of age when the body is already going through age-related mineral metabolism disorders, while most of the women are in their post-menopausal period. Therefore, all women with COPD and GP in post-menopausal period with BTMD disorders are recommended to have mandatory check-up by a gynecologist and endocrinologist [10].

The next OP examination is recommended [2, 21, 22]:

- In 2 years – for patients with no signs of OP at the time of primary densitometry who continued receiving high doses of inhaled GCS or oral GCS.

• In 1 year – for patents with signs of OP at the time of primary densitometry, who received OP therapy.

The main criteria for secondary OP treatment effectiveness is absence of new pathologic fractures as well as normalization or growth of indicators of mineral saturation and mineral density of the bone tissue indicated by densitometry [10].

The proposed «Algorithm for Diagnosis and Treatment of Chronic Obstructive Pulmonary Disease in Patients with Pathologic Processes of the Oral Cavity» (figure) was tested at the Department of Diagnostics, Therapy and Clinical Pharmacology of Pulmonary Diseases at the SI National Institute of Phthisiology and Pulmonology Named after F. G. Yanovskii NAMS Ukraine.

63 COPD patients were examined in accordance with the algorithm (FEV_1 – (46,2 ± 2,0) %; FEV_1/FVC – (50,6 ± 1,6)), who belong to Group I, among them 41 men and 22 women between the age of 40 and 80. The patients were directed to the Institute's clinics from other medical institutions for diagnosis verification, treatment of exacerbations and basic COPD therapy correction.

The control group (Group II) was made up of 30 individuals, among them 18 men and 12 women, of the same age group – 40–80 years old, with not COPD or other chronic somatic pathology in their health history, who volunteered to participate in the study.

According to the severity of clinical symptoms, functional indicators and risk of possible complications, all COPD patients were divided into clinical groups (under the Order of the Ministry of Healthcare of Ukraine dated 27 June 2013 № 555 «Unified Clinical Procedure of Primary, Secondary (Specialized), Tertiary (Highly Specialized) Medical Assistance and Medical Rehabilitation, «Chronic Obstructive Pulmonary Disease»). 22 (34,9 %) of the 63 patients examined were attributed to the clinical group B, 12 (19,1 %) – to the clinical group C, 29 (46,0 %) – to the clinical group D.

At the time of check-up by a dentist on the basis of periodontal examination and multi-slice computer tomography of the maxillofacial part, all COPD patients were diagnosed with GP: in 29 (46,0 %) of the patients – stage I, in 17 (27,0 %) – stage II, and in 17 (27,0 %) – GP complications – secondary adentia. A large portion (47,0 %) of the 17 COPD patients with complete secondary adentia were clinical group D patients, who, besides the periodontal treatment, needed a wide scope of orthopedic assistance.

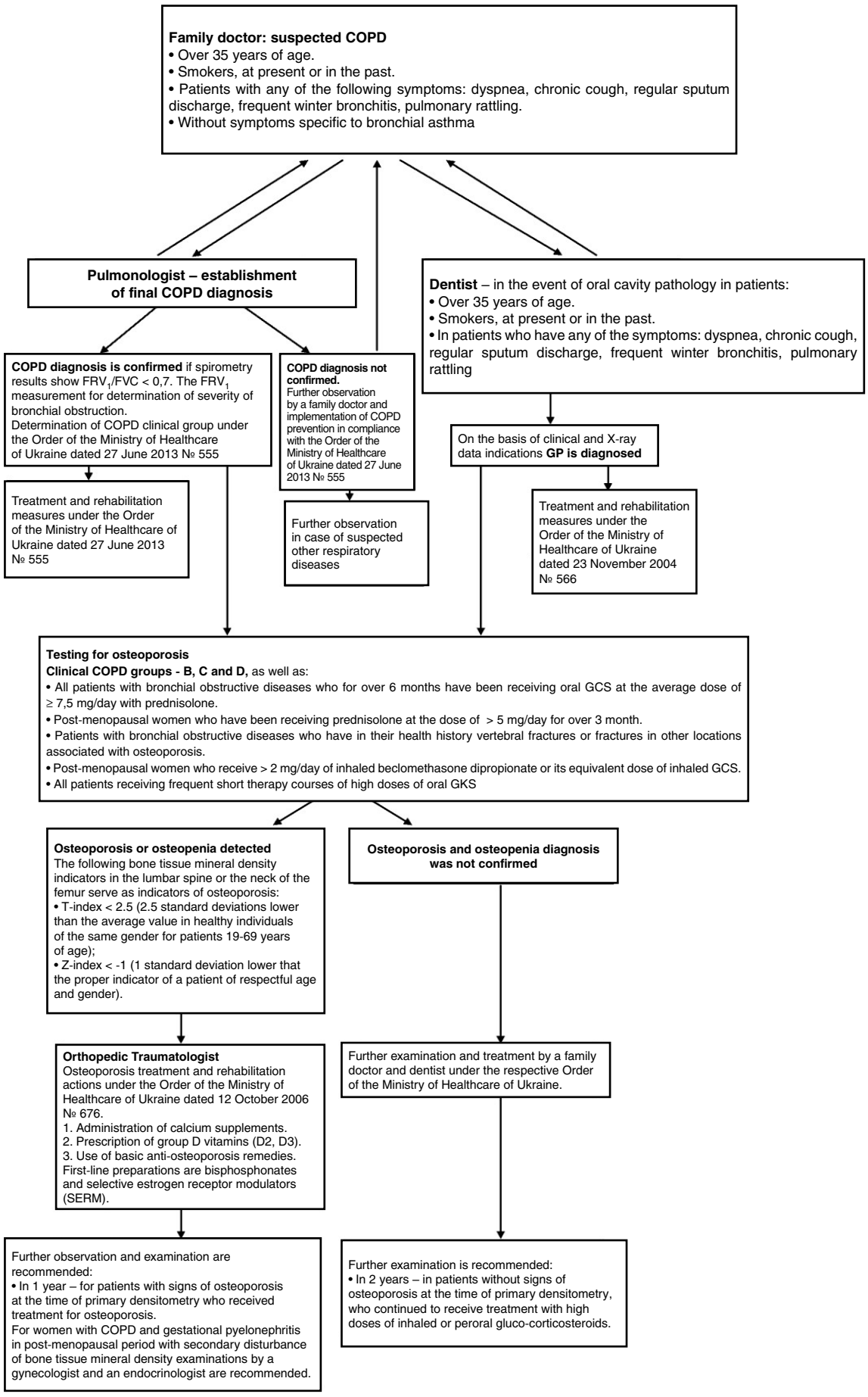

***Figure*. Diagnostic and treatment algorithm of chronic obstructive pulmonary disease in patients with pathological processes of the oral cavity**

In the control group individuals with no somatic diseases there were also signs of GP detected, however primarily at the initial stage or I stage of severity.

Therefore, under the clinical X-ray periodontal examination of COPD patients, more severe periodontal destruction processes were established than in individuals of the same group with no somatic pathology.

The health histories indicate that only 3 (4,8 %) of COPD patients had been diagnosed with concomitant OP. Under the algorithm, however, all 63 COPD and GP patients and 30 control group individuals with GP received OP examination.

To indicate OP, the results of quantitative computer densitometry (3D QCT) were analyzed.

OP diagnosis was conducted with the use of multi-slice computer tomograph «Aquilion» TSX-101A, GCD 07*3087 by «Tochiba» Company (Japan) with the help of licensed «QST Pro» software on the basis of study of mineral density of lumbar vertebrae (L1–L3).

As a result of the examination conducted almost all the examinees – in 62 (98,4 %) of the 63 COPD patients indicated systemic disorders of bone tissue mineral density. 18 (28,6 %) of the patients were diagnosed with osteopenia, and 44 (63,8 %) – OP, which is 6 times greater than the frequency of OP diagnosing in the control group. Only one patient of the clinical group B displayed no pathologic changes of the bone system.

Within the clinical groups of the COPD patients it was established that OP was diagnosed more frequently in the clinical groups C and D – in 9 (75,0 %) of 12 and in 23 (79,3 %) of 29 patients respectively. In the clinical group B, OP was detected in 12 (54,6 %) of 22 patients.

The control group, when compared against group I, showed significantly greater number of individuals with no bone system pathology – 13 (43,3 ± 9,0) % and 1 (1,6 ± 1,6) %, $p < 0,01$ and significantly less individuals with OP – 3 (10,0 ± 5,5) % and 44 (63,8 ± 5,8) %, $p < 0,01$ respectively.

14 (46,7 %) individuals from group II had signs of osteopenia that were primarily preconditioned by senior age of the patients and by presence of involution processes, which corresponds to average statistical data of studies among the population.

Application of the algorithm for diagnosis and treatment of chronic obstructive pulmonary disease in patients with pathologic processes of the oral cavity made it possible to identify COPD patients with GP and mineral metabolism disorders, who did not obtain timely diagnosis for osteopenia and OP.

Thus, high prevalence rate of OP among COPD patients was evidenced, which in the examined group equaled 63,8 %, while GP was observed in all patients.

It was established that OP in COPD patients was discovered 6 times more often than in individuals without somatic pathology of the same age and gender, which serves as a basis to consider presence of COPD as an important risk factor for development of secondary systemic OP.

It was evidenced that all COPD patients with GP in the clinical groups B, C and D are in need of examination for OP. The most numerous group where structural and functional disorders of the bone system were observed is the clinical group D, which was characterized with severe clinical symptoms, low functional indicator values and the greatest risk of possible COPD complications. In this clinical group, OP was detected most frequently – in 79,3 % of patients, the observed forms of GP are more severe and its complication is complete secondary adentia.

COPD patients with pathologic processes of the oral cavity as well as the control group individuals with GP who showed mineral metabolism disorders received comprehensive treatment (under the respective Orders) and recommendations as to secondary examination for OP according to the proposed algorithm.

The algorithm is a new quality approach to diagnosis and treatment of COPD patients with pathologic processes of the oral cavity, since it makes it possible to conduct prevention, early diagnosis and treatment for COPD and the oral cavity pathologic processes, which serves as considerable prevention measure against sever COPD, development of secondary systemic OP and GP.

The following may be recommended as main principles for preventive and treatment measures for secondary osteopenic syndrome in COPD and GP patients:

1. Prevention, early detection and treatment of COPD and pathological process of the oral cavity.

2. Inflammatory process activity control; maintaining prolonged remission. Decrease in the frequency of exacerbation occurrence by means of adequate administration of inhaled GCS and bronchodilators as well as prevention by vaccination.

3. Administration of minimal effective doses of inhaled GCS within the basic therapy. Application of short courses of systemic GCS during COPD exacerbations. If possible, avoiding repeated courses of GCS.

4. Administration of medications with minimum osteoporosis effect.

5. Decrease of the negative influence of other factors of OP development – smoking, alcohol abuse, sedentary lifestyle, prolonged fasting, etc.

6. Timely identification and treatment of the concomitant pathology that impacts bone metabolism: hyperthyroidism, hyperparathyroidism, kidney and blood system damage, etc.

7. Preservation and maintenance of positive calcium balance (diet, intake of calcium supplements in combination with vitamin D or its active metabolites).

8. Body mass index maintenance at the level of at least 19 kg/m^2.

9. Physical rehabilitation, maintaining active lifestyle with adequate sun exposure.

10. Administration of basic anti-osteoporotic medications for patients with severe osteopenia or OP.

11. In the event of no counter-indications in post-menopausal women – compatible hormonal therapy medications; during the pre-menstrual period in case of ovarian-menstrual cycle disorders – control over 17β-estradiol and, if necessary, hormone replacement therapy medications, including androgens, depending on the hormonal profile.

12. In men – testosterone level control, if necessary, hormone replacement therapy with androgens.

13. Conducting control densitometry test in COPD patients with high risk of OP development – clinical groups B, C and D, as well as for patients expecting intake of GCS or receiving GCS therapy.

14. Annual densitometric control of the bone mineral saturation and bone tissue mineral density indicators in COPD patients at risk of osteopenia development or with already decreased bone mass, combined with metabolism markers laboratory control.

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АЛГОРИТМ ДІАГНОСТИКИ ТА ЛІКУВАННЯ ХРОНІЧНОГО ОБСТРУКТИВНОГО ЗАХВОРЮВАННЯ ЛЕГЕНЬ У ХВОРИХ ІЗ ПАТОЛОГІЧНИМИ ПРОЦЕСАМИ РОТОВОЇ ПОРОЖНИНИ

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Резюме

Захворювання дихальної системи та порожнини рота мають багато спільних чинників розвитку, а виникнення патологічних процесів в одній із систем безпосередньо впливає на іншу та весь організм в цілому. Але у зв'язку з відсутністю стандартних схем обстеження хворих і діагностики хронічного обструктивного захворювання легень (ХОЗЛ) із супутніми патологічними процесами ротової порожнини профілактичні і лікувальні заходи цієї поєднаної патології не розробляються належним чином.

Розроблений та апробований алгоритм діагностики та лікування ХОЗЛ у хворих із патологічними процесами ротової порожнини, суть якого полягає у застосуванні додаткових методів обстеження, а саме: анкетування для раннього виявлення хворих на ХОЗЛ, супутньої патології ротової порожнини; проведення кількісної комп'ютерної денситометрії для виявлення вторинного системного остеопорозу (ОП); консультації лікаря-стоматолога, а при необхідності – інших спеціалістів, якими встановлюється діагноз патології ротової порожнини та порушень мінерального обміну кісткової тканини; і на підставі отриманих даних до базисної терапії ХОЗЛ призначається відповідна терапія супутніх захворювань.

За даним алгоритмом обстежено 63 хворих у віці від 40 до 80 років, яких було направлено до клініки інституту з інших медичних закладів для уточнення діагнозу, лікування загострень і корекції базисної терапії ХОЗЛ. Контрольну групу склали 30 осіб у тому самому віці, які в анамнезі не мали ХОЗЛ або іншої хронічної соматичної патології та добровільно погодилися взяти участь у дослідженні.

У всіх хворих на ХОЗЛ діагностовано генералізований пародонтит (ГП): у 29 (46,0 %) хворих – I ступеня, у 17 (27,0 %) – II ступеня та у 17 (27,0 %) – ускладнення ГП – повну вторинну адентію. Із анамнеза відомо, що лише 3 (4,8 %) хворих на ХОЗЛ мали діагностований супутній діагноз – ОП.

В результаті проведеного обстеження майже у всіх досліджуваних – 62 (98,4 %) із 63 хворих на ХОЗЛ – було виявлено системні порушення мінерального обміну кісткової тканини. У 18 (28,6 %) хворих із 63 було виявлено остеопенію, а у 44 (63,8 %) – ОП, що в 6 разів перевищувало частоту діагностики ОП в контрольній групі.

Таким чином, була доведена висока розповсюдженість ОП у хворих на ХОЗЛ, яка в групі, що досліджувалась, складала 63,8 %, а ГП спостерігався у всіх хворих.

Доведено, що обстеження на ОП потребують всі хворі на ХОЗЛ з ГП клінічних груп B, C і D. Найбільш чисельною групою, де спостерігаються структурно-функціональні порушення кісткової системи, є клінічна група D. В цій групі найбільш часто виявляється ОП – у 79,3 % пацієнтів, спостерігаються більш тяжкі форми ГП та його ускладнення – повна вторинна адентія. Цій категорії хворих призначено комплексне лікування (за відповідними Наказами МОЗ України) та рекомендовано повторне обстеження на ОП. На підставі проведених досліджень розроблені основні принципи профілактичних і лікувальних заходів при вторинному остеопенічному синдромі у хворих на ХОЗЛ з ГП.

Даний алгоритм є якісно новим підходом до діагностики та лікування ХОЗЛ у хворих із патологічними процесами ротової порожнини, оскільки дозволяє проводити профілактику, ранню діагностику і лікування ХОЗЛ з патологічними процесами ротової порожнини, що значно запобігає тяжкому перебігу ХОЗЛ, розвитку вторинного системного ОП і ГП.

Ключові слова: *хронічне обструктивне захворювання легень, генералізований пародонтит, остеопенія, остеопороз, діагностика, лікування.*

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АЛГОРИТМ ДИАГНОСТИКИ И ЛЕЧЕНИЯ ХРОНИЧЕСКОГО ОБСТРУКТИВНОГО ЗАБОЛЕВАНИЯ ЛЕГКИХ У БОЛЬНЫХ С ПАТОЛОГИЧЕСКИМИ ПРОЦЕССАМИ РОТОВОЙ ПОЛОСТИ

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Резюме

Заболевания дыхательной системы и полости рта имеют много общих факторов развития, а возникновение патологических процессов в одной из систем непосредственно влияет на другую и весь организм в целом. Но в связи с отсутствием стандартных схем обследования больных и диагностики хронического обструктивного заболевания легких (ХОЗЛ) с сопутствующими патологическими процессами ротовой полости профилактические и лечебные мероприятия этой сочетанной патологии не разрабатываются должным образом.

Разработан и апробирован алгоритм диагностики и лечения ХОЗЛ у больных с патологическими процессами ротовой полости, суть которого заключается в применении дополнительных методов обследования, а именно: анкетирования для раннего выявления больных ХОЗЛ, сопутствующей патологии ротовой полости; проведения количественной компьютерной денситометрии для выявления вторичного системного остеопороза (ОП); консультации врача-стоматолога, а при необходимости – других специалистов, которые устанавливают диагноз патологии полости рта и нарушений минерального обмена костной ткани; и на основании полученных данных к базисной терапии ХОЗЛ назначается соответствующая терапия сопутствующих заболеваний.

Согласно данному алгоритму обследовано 63 больных в возрасте от 40 до 80 лет, которые направлялись в клиники института из других медицинских учреждений для уточнения диагноза, лечения обострений и коррекции базисной терапии ХОЗЛ. Контрольную группу составили 30 человек того же возраста, которые в анамнезе не имели ХОЗЛ или других хронических соматических заболеваний и добровольно согласились принять участие в исследовании.

У всех больных ХОЗЛ диагностирован генерализованный пародонтит (ГП): у 29 (46,0 %) больных – I степени, у 17 (27,0%) – II степени и у 17 (27,0 %) – осложнение ГП – полная вторичная

адентия. Из анамнеза известно, что только 3 (4,8 %) больных ХОЗЛ имели диагностированный сопутствующий диагноз – ОП.

В результате проведенного обследования почти у всех исследуемых – 62 (98,4 %) из 63 больных ХОЗЛ было выявлено системное нарушение минерального обмена костной ткани. У 18 (28,6 %) пациентов выявлена остеопения, а у 44 (63,8 %) – ОП, что в 6 раз превышало частоту диагностики ОП в контрольной группе.

Таким образом, была доказана высокая распространенность ОП у больных ХОЗЛ, которая в исследуемой группе составила 63,8 %, а ГП наблюдался у всех больных.

Доказано, что в обследовании на наличие ОП нуждаются все больные ХОЗЛ с ГП клинических групп B, C и D. Наиболее многочисленной группой, где наблюдаются структурно-функциональные нарушения костной системы, является клиническая группа D. В этой группе наиболее часто диагностируется ОП – у 79,3 % пациентов, наблюдаются более тяжелые формы ГП и его осложнение – полная вторичная адентия. Этой категории больных назначено комплексное лечение (согласно действующим Приказам МОЗ Украины) и рекомендовано повторное обследование на наличие ОП. На основании проведенных исследований разработаны основные принципы профилактических и лечебных мероприятий при вторичном остеопеническом синдроме у больных ХОЗЛ с ГП.

Данный алгоритм является качественно новым подходом к диагностике и лечению ХОЗЛ у больных с патологическими процессами ротовой полости, так как позволяет проводить профилактику, раннюю диагностику и лечение ХОЗЛ с патологическими процессами ротовой полости, значительно предотвращает тяжелое течение ХОЗЛ, развитие вторичного системного ОП и ГП.

Ключевые слова: *хроническое обструктивное заболевание легких, генерализованный пародонтит, остеопения, остеопороз, диагностика, лечение.*

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