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DEPARTMENT OF INTERNAL DISEASES №2

CLASSIFICATION OF PNEUMOCONIOSIS

METHODOLOGICAL MATERIALS

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Methodical materials intended for teaching 4th year students (7 semester) of the Faculty of Medicine of FGBOU VO SOGMA in the discipline "Occupational Diseases".

Compiled by:

Head Department of Internal Medicine № 2 MM Tebloyev Ph.D., Associate Professor

Assistant Department of Internal Diseases No. 2, Zhukaeva I.A.

Reviewers:

T.M. Butaev - Doctor of Medical Sciences, Associate Professor Head. Department of Hygiene MPF with Epidemiology FSBEI HE SOGMA

A.R. Kusova - Doctor of Medical Sciences, Professor Head. Department of General Hygiene and Physical Education of the Federal State Budgetary Educational Institution of Higher Education SOGMA

Introduction

In the Soviet Union, a classification published in 1958 was used to diagnose pneumoconiosis. During the period that has passed since its approval, a lot of new data has accumulated that determine the feasibility of revising and revising the classification both in relation to the etiological principle, as well as the radiological and clinical characteristics with the detailing of radiological manifestations and a finer gradation of the size and prevalence of shadow formation.

The new classification (1996) includes the division of pneumoconiosis according to:

1. Etiological sign.
2. The main mechanisms of pathogenesis (cytotoxic effect of silicon dioxide)
3. The main X-ray changes.
4. Features of the clinical picture.
5. The current.
6. Complications.
7. Functional changes.

The general clinical and radiological characteristics of pneumoconiosis are given for all types of pneumoconiosis. X-ray characteristics are close to the 1971 International Classification of Pneumoconiosis, but along with some simplification of it, it is supplemented by a grouping of stages of pneumoconiosis according to the classification. Radiological changes are coded in designations that match the International Classification. Additional radiological signs are somewhat reduced in comparison with the International classification. Clinical and functional characteristics of the disease, course and complications make it possible to supplement the International Classification with clinical data reflecting the features of the course of pneumoconiosis. For the diagnosis, after the name of pneumoconiosis and its stages, signs should be typed according to the radiological and clinical paragraphs,

The given classification of pneumoconiosis makes it possible to characterize in detail the various variants of coniotic disease in terms of its etiology, radiological and clinical manifestations. The X-ray part of it can be used for the International unification of the types of dust pathology and for obtaining comparable information.

The classification is divided into two sections:

1. Etiological grouping of pneumoconiosis (by types of industrial dust).

2. Clinical and radiological characteristics of pneumoconiosis.

1. ETIOLOGICAL GROUP

PNEUMOCONIOSIS (by type of industrial dust)

Pneumoconioses are chronic occupational diseases of the lungs that develop from inhalation of dust and are accompanied by a persistent diffuse connective tissue reaction of the lung tissue, mainly of the fibrous type, radiologically expressed in a disseminated pulmonary process of the nodular or interstitial type.

According to the ethnological principle, the following groups of pneumoconiosis should be distinguished:

1. Silicosis
2. Silicatoses
3. Carboconiosis
4. Metalloconioses
5. Pneumoconiosis from mixed dust
6. Pneumoconiosis from organic dust.

1. Silicosis - The most common and severe form of pneumoconiosis, which develops from the inhalation of silica dust containing free silicon dioxide. The most severe forms of silicosis develop from dust with a high quartz content. Silicosis is observed among workers in the dusty professions in the mining 'industry (drillers, tunnellers, miners, woodcutters, blastmen, etc.); in the machine-building industry (sandblaster, shotblaster, chopper, etc.); in the production of refractory materials (exposure to dinas dust), in sand grinding, tunneling, granite processing. Silicosis that develops under these conditions is manifested mainly by nodular, less often interstitial fibrosis and, with progression, passes into nodular forms, more often than other types of pneumoconiosis, it is complicated by tuberculosis and gives late forms. The severity of silicosis is determined to a large extent by the aggressiveness of dust, in particular, by the percentage of quartz, dispersion. Particularly important is the content of free silicon dioxide in the fine fraction (respirable). Severe nodular silicosis benefitsthey develop in persons working in conditions in which a large percentage of quartz is in the respirable fraction (with two-stage gravimetric determination).

Silicosis, developing from exposure to mixed dust with a significant content of quartz, is classified as pneumoconiosis from mixed dust in the classification.

2. Silicatoses- pneumoconiosis, developing dust inhalation of silicates - minerals containing silicon dioxide in a bound state with other elements (magnesium, calcium, iron, aluminum, etc.). Bestosis, talcosis, kaolinosis, cementosis, pneumoconiosis from mica dust, etc. are attributed to silicates. Silicates are widespread in nature and are used in many industries. The development of pneumoconiosis can occur both during the extraction and production of silicates, and during their processing and use. With silicosis, there is a predominantly interstitial form of fibrosis. Of silicatoses, asbestosis is the most common.

3. Carboconiosis- pneumoconiosis caused by exposure to varieties of carbon-containing dust (coal, graphite, soot, coke). In carboconiosis, moderately pronounced predominantly interstitial and small-lesion fibrosis is more often observed. The most common in this subgroup is anthracosis, the development of which is possible in miners working only in the extraction of coal, in workers of concentration factories and some other industries, work in which is associated with the inhalation of coal dust.

4. Metalloconioses- pneumoconiosis from exposure to dust of various metals. With many of them, there is deposition in the lungs of radio-opaque dust with a moderate fibrous reaction (siderosis, baritosis, stanyosis). This type of pneumoconiosis is characterized by a predominance of fine-spotted rather clear darkening. In some metalloconiosis, the toxic and allergic effect of dust with a secondary fibrotic reaction (beryllium, cobalt, rare earth metals, nickel, chromium, aluminum, tungsten, others) prevails.

5. Pneumoconiosis from mixed dustsare observed under the combined effect of various dusts containing an admixture of free silicon dioxide or almost free from it. The clinical and radiological picture of pneumoconiosis of this group is very diverse and largely depends on the composition and physicochemical properties of the dust itself.

The determining factor for this group is the impurity of free silicon dioxide. A distinction should be made between:

1) pneumoconiosis from mixed dust with a significant content of quartz;

2) pneumoconiosis from mixed dusts that do not contain free silicon dioxide or with a slight admixture of it. Conventionally, dust with an insignificant amount of SiO_2

refers to dust containing less than 5-10% free SiO2.

Pneumoconiosis from mixed dusts with a significant quartz content is currently the most common type of pneumoconiosis, close to silicosis, being essentially its special type. It is observed most often among miners of coal and iron ore mines, in the porcelain and faience and ceramic industries, in the production of chamotte and other refractory products. Depending on the nature of the impurities, anthracosilicosis, sidero-silicosis, and silico-silicosis should be distinguished.

Pneumoconiosis from mixed dust without or with a low content of quartz includes pneumoconiosis of electric welders, in which we are mainly talking about the deposition in the lungs of radio-opaque dust, emery tools, or grinders, pneumoconiosis in workers of rubber industry enterprises from the combined effects of soot, talc and other components of rubber compounds other. Radiographically, with these pneumoconiosis, small-spotted (radiopaque effect) and interstitial forms are possible.

6. Pneumoconiosis of organic dusts - unite a group of occupational diseases that can be attributed to pneumoconiosis only conditionally, since not all of them involve a disseminated pulmonary process with the development of diffuse fibrosis. This is an occupational lung disease - byssinosis from inhalation of dust from plant fibers and, above all, cotton, in which bronchitic and allergic syndromes predominate. With other pneumoconiosis from organic dusts, diffuse pulmonary changes are possible, more often of inflammatory or allergic genesis with a moderate fibrotic reaction. These are pneumoconiosis from flour and grain dust and such rare forms as - bagassosis - from sugar cane dust, pneumoconiosis from plastic dust and others. This group of diseases should include the so-called. farm lung from various agricultural dusts,

Clinical and radiological characteristics of pneumoconiosis

The diagnosis of pneumoconiosis is established with an appropriate professional history, the presence of characteristic radiological changes in the lungs, taking into account the clinical picture of the disease and functional disorders.

The main X-ray method for diagnosing pneumoconiosis is a general X-ray of the lungs on a 30x40 cm or 35x35 cm film with an exposure time of no more than 0.1 sec.

X-ray characteristics

Radiographically, pneumoconiosis is characterized by diffuse disseminated changes

of a nodular or interstitial type or nodular formations developing on a nodular or interstitial background, fibrotic changes in the roots of the lungs and a fibrotic reaction from the pleura.

The classification takes into account the following radiological; signs:

a) the nature of the darkening - shape, size and contours;

b) the prevalence of these blackouts, as well as the area occupied by them, their density or density.

To display X-ray changes in the lungs, coding is used with the designation of individual signs in Latin letters according to the international classification of 1971. The stages of the process (I-II-III) are also taken into account.

In the absence of data for pneumoconiosis, "0" is put in the description of the image. If there is doubt about the presence of coniotic changes (a low degree of severity of diffuse changes in the pulmonary pattern, there is no certainty about the presence of its changes) - in the description put "0-1" - control. In such cases, additional X-ray studies are performed: initially enlarged images, tomograms, etc. In the absence of clarity, after the production of additional X-ray studies, the period of the control study is indicated (6, 12 months), which can be repeated.

By the nature of the changes, nodular, interstitial and nodular pneumofibrosis are distinguished.

Pneumoconiosis nodosa is characterized by the presence of small (or small) rounded opacities in the lungs, which are the display of coniotic nodules on the roentgenogram.

According to the size of the nodules, there are three types of lesions:

p - the size of the nodules up to 1.5 mm;

q - the size of the nodules from 1.5 to 3 mm

r - nodules ranging in size from 3 to 10 mm.

The nodules are usually rounded, of medium intensity, and well-defined. In some types of mat of metalloconiosis (baritosis, siderosis), the intensity of the shadows of the nodules can be significant due to the high contrast for X-rays of dust particles deposited in the lungs.

To determine the prevalence of nodular lesions and the density of distribution, a differentiation of the process by categories is introduced.

1. a small number of nodules;

2. moderate number of nodules;

3. multiple nodules.

The nodular process is usually bilateral and diffuse. Pneumoconiosis nodosa is most common in workers in contact with dust containing a significant percentage of free silicon dioxide, that is, in silicosis.

Interstitial pneumoconiosisradiologically characterized by the predominance of interstitial, periobronchial and perivascular changes. The coded features differ:

s- subtle, irregular, linear and reticular changes;

t - heavy, irregular, linear changes

u - rough irregular, in places cellular small-spotted darkening.

The indicated X-ray signs correspond to the following morphological changes: "s" indistinct perivascular and peribronchial sclerosis with thickening of the interlobular septa; "T" - the same morphological changes, but in a more pronounced form involving the entire thickness of the vascular and bronchial walls in the process; "And" - even more significant connective tissue changes in blood vessels, bronchi, pulmonary alveoli, interlobular septa. There may also be bronchiectasis, especially in the lower belts of the lungs. Lesions of an interstitial nature are usually diffuse bilateral. The density or density of interstitial changes, as in the nodular process, differs in categories: 1. - mild changes; 2. - moderately pronounced interstitial changes, but the pulmonary pattern is still defined; 3.

Interstitial fibrosis can occur in all types of pneumoconiosis, but is especially common when exposed to dust with a small amount of free SiO2. In the course of the disease, the interstitial pneumoconiotic process, including silicosis, is more favorable than the nodular and nodular. In silicosis, type "s" interstitial changes may be the initial phase in the development of the nodular process.

The interstitial form of pneumoconiosis in all three of its categories is most common in asbestosis. X-ray imaging of the "i" shape in asbestosis is usually characterized by a severe clinical picture of the disease.

Nodular pneumoconiosis. Nodal changes in the lungs with pneumoconiosis are distinguished by the size of fibrous formations, their shape, the nature of the contours, as well as the area of distribution of these opacities (the sum of the largest diameters).

By the size of the nodal formations and the area they occupy, they are distinguished:

A - small-knot option - the diameter of the knots is from 1 to 5 cm with the total sum of diameters not exceeding 5 cm.

B - large-nodular process - the diameter of the nodes is from 5 to 10 cm, with the total sum of diameters not exceeding 1/3 of the pulmonary field.

C - massive pneumoconiosis - the size of the nodes is more than 10 cm in diameter, and the total sum of diameters exceeds 1/3 of the pulmonary field.

Nodular pneumofibrosis is formed when small nodules merge, at the site of atelectasis, pneumonic foci, and with complications from tuberculosis. In the latter cases, nonspecific or tuberculous processes change the shape and structure of the nodes, which can be seen during dynamic X-ray observation of the patient (silicotuberculomas).

Nodules can be one - or two-sided. Their shape can be round or irregular, depending on the reason for their formation. The outlines of these foci can be sharp and indistinct.

In the formation of nodal forms, it is necessary to distinguish the background on which they were formed: nodular or interstitial.

The formation of nodular pneumoconiosis is usually associated with exposure to dust, contains free silicon dioxide, and is usually found in silicosis, rarely in other pneumoconiosis.

Stages of pneumoconiosis. The classification retains the stages of pneumoconiosis, determined by the code of the radiological characteristics.

X-ray signs of pneumoconiosis in the first stage will be somewhat different depending on which option is the development of pneumoconiosis - nodular or interstitial. The X-ray permeability of the dust should also be considered in the interpretation of the X-ray picture.

The first stage corresponds to the I-th category of all code groups and the 2nd category with the code p: p - 1.2; q — 1; r — 1 in the nodular form and the 1st and 2nd categories of all code groups in the interstitial form (s — 1; s — 2; t — 1; t — 2, u — 1; u — 2).

The second stage corresponds to the 3rd category of all code groups: p - 3q - 3; r - 3 with a nodular form and s - S; t — 3; u — 3 with interstitial form.

Third stage corresponds to all types of nodular form (A, B, C).

Should take into account the transitional forms: I — II and II — III stages. I — II

stage of pneumoconiosis corresponds to the 2nd category of codes "q" and "r" (ie, q — 2 and r — 2). II-III stage of pneumoconiosis corresponds to code A on a small-nodular background.

In cases of the presence of a small nodular formation in the lungs on an interstitial background (code A), it is possible to refer it to stage 1 of pneumoconiosis.

To characterize a number of other radiological signs observed in pneumoconiosis, conventional letter designations are used.

Additional radiological signs:

ah — the fusion of nodules and small irregular spotted shadows can be one- or two-sided, symmetrical and asymmetrical. Fusion is one of the factors in the formation of nodular fibrosis. Localization is determined by the segments of the lungs.

pq — pleuro-diaphragmatic adhesions are more common in the middle, most high-standing areas of the diaphragm. There is a direct relationship between the severity of pul - monary fibrosis, fibrosis of the interlobar pleura and pleuro-diaphragmatic adhesions.

pqp - pleuro-pericardial adhesions usually occur with severe pneumofibrosis, are the result of the development of a fibrosing process in the visceral and parietal pleura and pericardium. They can also develop in places of deeply located pneumonic foci.

pqc - pleural calcifications are more common in asbestosis with a predominant lesion of the visceral and parietal pleura. They are usually bilateral. The shape is irregularly rounded, the intensity of the shadow is uneven, the contours are uneven, clear. The size of individual calcifications is up to 10 cm or more. With this form of asbestosis, the pulmonary parenchyma is also affected, but in the X-ray picture, pleural changes are dominant. A frequent complication of asbestosis is a malignant lesion - mesothelioma.

Cn- Indication of nodules occurs in nodular silicosis. At the same time, the intensity of the shadows increases sharply, individual nodules have clear contours. Calcification is diffuse bilateral, and in some cases, with the nodal process, small calcifications are localized in the area of large nodes, creating calcification fields.

cl—Calcification of the lymph nodes of the roots of the lungs, paratracheal, mediastial is more often observed when pneumoconiosis is combined with tuberculosis. The lime deposition is uneven.

es - shell-like calcification of lymph nodes, reminiscent of eggshell,occurs in silicotuberculosis, but it can also be in silicosis without any signs of tuberculosis.

hi - enlargement and compaction of the lymph nodes of the roots of the lungs and mediastinum.

em — emphysema of the lungs occurs in X-ray imaging in three main types: 1) diffuse, uniform, bilateral; 2) bilateral in the form of multiple small swellings in the area of nodules; 3) bullous (bu) more often in the upper zones in the places where the lung tissue is most affected by fibrosis.

co - changes in the size and shape of the heart are very diverse, as well as the reasons for them (increase in size, pericardial adhesions, etc.).

cf - cor pulmonale, as a consequence of pulmonary heart failure, has a very diverse x-ray picture, depending on the degree of its development, the state of the surrounding organs, etc.).

di - displacement of the mediastinal organs, heart and roots of the lungs in its genesis is very diverse (pulling towards massive fibrosis, adhesions, atelectasis, pushing in the opposite direction with pneumothorax, etc.).

px — pneumothorax with pneumoconiosis, one or two-sided, usually occurs due to rupture of bullae located subpleurally.

aim - middle lobe syndrome - its occurrence is caused by impaired patency of the middle lobe bronchus (enlarged lymph nodes, proliferation of connective tissue, obstruction of the bronchus due to an inflammatory process, in particular, tuberculous, the development of a neoplastic process).

cv — cavities of various sizes and shapes are more common in silicotuberculosis, much less often cavities arise in fibrous nodes with their partial necrosis without infection.

rl - Kaplan's syndrome or silicoarthritis is a combination of rheumatoid joint lesions and numerous rounded formations in the lungs 0.5-5.0 cm in diameter against a background of more or less pronounced pulmonary fibrosis from dust containing free silicon dioxide.

Clinical characteristics of pneumoconiosis

Most pneumoconiosis is characterized by relatively poor clinical symptomatology. Most often, the clinical picture in pneumoconiosis is reduced to moderate bronchitis and pulmonary emphysema. As a rule, with pneumoconiosis, pulmonary insufficiency is

observed, which increases with the progression of pneumofibrosis or bronchitis syndrome. Persistent and significant respiratory failure leads to disruption of the cardiovascular system and the development of cor pulmonale. The combined pathology of the respiratory and cardiovascular system leads to a symptom complex of pulmonary heart failure.

The severity of pulmonary and pulmonary heart failure should be determined according to generally accepted classifications (I, II, III degree of pulmonary insufficiency, cardiac decompensation of I, II, III degrees): Pulmonary insufficiency in pneumoconiosis develops mainly due to obstructive and restrictive ventilation disorders. Less commonly, diffusion disorders are observed. It is necessary to differentiate between compensated and decompensated pulmonary heart with specification of the degree of circulatory disorders in a large circle.

The degree of emphysema should be classified according to its severity. It is important to consider the form of emphysema. With pneumoconiosis, severe widespread or so-called vesicular emphysema of the panacinar or centrilobular type is relatively rare, the development of which is usually associated with widespread bronchospasm. With nodular pulmonary fibrosis, emphysema is usually perinodular or small bullous. Severe pulmonary fibrosis (silicosis) with the formation of large fibrous nodes is accompanied by large-bullous emphysema.

The clinical severity of bronchitis syndrome in various pneumoconiosis varies considerably. With silicosis, the clinical picture of bronchitis is not always present, in about a quarter to a third of patients. Bronchitis is more often observed when exposed to mixed dust, less often when inhaled predominantly of quartz dust. More natural phenomena of bronchitis with asbestosis, pneumoconiocytes, coal pneumoconiosis, pneumoconiosis from marble dust. Clinically distinguish between uncomplicated and complicated bronchitis. The latter forms include bronchitis with a pronounced bronchospastic, astmoid component or infection of the bronchial tree, as well as accompanied by a picture of chronic pneumonia. Severe pneumofibrosis is usually accompanied by deforming bronchitis. With silicosis and other pneumoconiosis, there are always hypertrophic,

Pneumoconiosis, depending on their etiological affiliation, have a different course. The most severe disease among the entire group of pneumoconiosis is silicosis, especially from exposure to high concentrations of silica dust. Under these conditions, the

development of silicosis can be observed with a short experience (less than 10 years), the tendency to progression of pulmonary fibrosis is more pronounced, and after the termination of work with dust, various complications are more often observed. In this case, the development of the so-called late silicosis. Radiographically, nodular and nodular forms of the process correspond to such silicosis. Silicosis from exposure to dust with a low content of free silicon dioxide develops with a longer period of time, it is expressed mainly in an interstitial or small-knot process without a pronounced tendency to progression.

Silicatoses are characterized predominantly by a lighter non-progressive or slowly progressive course after contact with dust has ceased.

An exception is asbestosis, in which the manifestations of the disease in severity can be close to silicosis.

Asbestosis, more often than silicosis, is accompanied by chronic bronchitis, a picture of broncho-bronchiolitis with severe respiratory failure due to obstructive, restrictive and diffusion syndrome can also be observed. For asbestosis, a pronounced pleural reaction is typical. Pneumofibrosis in asbestosis is also prone to progression. When exposed to some varieties of asbestos, the disease can occur as an isolated lesion of the pleura.

Talcum refers to relatively more benign pneumoconiosis, less often than asbestosis is accompanied by bronchitic syndrome, more often it does not have a pronounced tendency to progression. Talcosis from cosmetic powder is more severe, which in severity and shape approaches silicosis.

Carboconioses are predominantly interstitial or small-nodular forms, are rare in their pure form, have scanty symptoms, which are usual for pneumoconiosis, and may be accompanied by bronchitis and emphysema. The tendency to progression of pulmonary fibrosis without additional exposure to aches containing quartz and infection is small.

Metalloconiosis can have a different course. The most favorable of them are pneumoconioses, which are based on the accumulation of radiopaque dust in the lungs (siderosis, stanyosis, baritosis and some others). These pneumoconiosis do not progress after leaving work; in some cases, regression of the process is possible due to the removal of radio-opaque dust. The course of beryllium is distinguished by a significant originality - a disease caused by dust exposure to insoluble beryllium compounds, characterized by the development of diffuse pulmonary granulomatosis with the presence of interstitial fibrosis. In the clinical picture of beryllium disease, there are many features that indicate the allergic

and immunopathological mechanism of the development of the disease. Positive beryllium skin tests are important for the diagnosis.

The group of metalloconiosis includes changes in the lungs, developing from the dust of metals included in hard alloys, mainly tungsten and cobalt, since this pathology has long been considered as toxic pneumosclerosis: The disease most often manifests itself in the form of a relatively benign diffuse pneumosclerosis of the interstitial type, and in rare cases with a special predisposition develop severe progressive pulmonary fibrosis. In this classification, beryllium disease and lung disease from hard alloys are considered as a special form of pneumoconiosis from exposure to dust with toxic and allergic properties. The course of the disease from exposure to rare earth metals is also close to them. Diffuse predominantly interstitial pneumofibrosis can develop from exposure to aluminum dust,

Pneumoconiosisfrom mixed dusts with a significant quartz content, they are close to silicosis, but differ in a lower progression tendency, the predominance of interstitial forms. Non-quartz pneumoconiosis, developed from mixed dusts, is distinguished by a more favorable course and a long-term prognosis, up to regression.

Along the course, rapidly progressing pneumoconiosis (mainly silicosis) is distinguished, when the growth of the fibrotic process in the lungs occurs over a relatively short period (only a few years pass from stage to stage) and slowly progressive - in which fibrotic changes in the lungs remain stable for many years ; regression should be understood as the reverse development of fine-spotted shadows or interstitial changes in the lungs, mainly due to self-cleaning of the lungs from radio-opaque dusts. Late pneumoconiosis (more often silicosis) is a process that develops after a long latency period, sometimes long years after stopping work with dust.

Pneumoconioses from organic dusts are mostly diseases that are also conditionally included in the pneumoconiosis group, since they rarely involve a diffuse fibrous reaction in the lungs, most often when exposed to organic dust, bronchitic damage with an allergic component develops, with microorganisms and especially fungi.

Complications. Complications of pneumoconiosis include tuberculosis. With relatively little expressed silicosis and other pneumoconiosis, the usual forms of tuberculosis are more often observed, corresponding to its generally accepted classification. With severe silicosis, less often with other pneumoconiosis (asbestosis, talcosis), it is possible to develop peculiar forms of silicotuberculosis, coniotuberculosis, in which

pneumoconiosis and tuberculosis are difficult to differentiate from each other. With the latter variant of coniotuberculosis (more often silicotuberculosis), there are: silicotuberculosis bronchoadenitis, small-nodular, large-nodular (silicotuberculosis) and massive silicotuberculosis (the size of the opacities corresponds to the nodal forms (A, B, C).

It is recommended, if possible, to characterize the activity of the tuberculous process in coniotuberculosis (active, inactive), to indicate bacillic excretion and decay.

Complications of pneumoconiosis should include acute and chronic pneumonia, bronchiectasis, bronchial asthma, as well as the autoimmune component of the disease of varying severity, up to a picture of rheumatoid arthritis. Such complications as erosion of the pulmonary vessels with pulmonary hemorrhage and bronchial fistulas (more often with silicotuberculosis) are possible.

Silicosis is relatively rarely associated with lung cancer. More often, malignant neoplasms of the lungs occur in asbestosis in the form of pulmonary cancer and pleural mesothelpoma, in these cases, cancer should be considered as a complication.

1) stage I silicosis nodular form (2p) without pulmonary insufficiency;

2) anthracosilicosis stage I - interstitial form (2 s), chronic bronchitis, pulmonary insufficiency of the II degree;

3) silicotuberculosis. Silicosis stage I-II, nodular form (2 r) with shell-like dehydration of the lymph nodes (es). Focal pulmonary tuberculosis. Stage III pulmonary insufficiency Pulmonary heart in the phase of subcompensation (cf.);

4) silicotuberculosis, Stage III large nodular silicosis. (B) with mid-lobe syndrome (alm), decay (cv) and bacillus excretion. Pulmonary insufficiency of the I-II degree;

5) stage II asbestosis (3u), bilateral adhesive pleurisy (pq) and left-sided adhesive pleuropericarditis (pqp). Pulmonary insufficiency II - III degree;

6) beryllium stage II (3 r). Pulmonary insufficiency of the I-II degree;

7) massive silicotuberculosis. Silicosis**III**stage (C). Bullous emphysema (bu). Pulmonary insufficiency**II-III**degree Pulmonary heart **in**decompensation phase (**Wed**). **VK +.**

CLASSIFICATION OF PNEUMOCONIOSIS

Types of pneumoconiosis					
Silicosis	Silicatoses	**Metalloconioses**	**Carboconiosis**	Pneumoconiosis from mixed dust	Pneumoconiosis from organic dust
	Asbestosis Talc Cement pneumoconiosis Mica pneumoconiosis Kaolinose	Beryllium Siderosis Aluminumosis Baritosis Staniasis Pneumoconiosis from rare earth hard and heavy alloys	Anthracosis Graphitosis Soot pneumoconiosis, etc.	1. Containing free silicon dioxide: anthracosilicosis, siderosilicosis, silicosis-silicosis 2. Does not contain free silicon dioxide or with an insignificant content of it: pneumoconiosis of grinders, pneumoconiosis of electric welders, etc.	Cotton Grain Suberic Reed, etc.
				Does not contain free silicon dioxide or with an insignificant content of it: pneumoconiosis of grinders, pneumoconiosis of electric welders, etc.	

CLINICAL AND X-RAY CHARACTERISTICS

X-ray characteristics						
The code	**The nature of the blackouts (shape, size, contours)**	**Prevalence, density, prevalence of shadows and area of distribution**	**Stage**	**Clinical and functional characteristics**	**Course of the disease**	**Complications**
0	No pneumoconiosis					**Tuberculosis:** 1. with differentiation of forms of tuberculosis (forms of tuberculosis according to the modern classification of tuberculosis) 2. Without differentiation of forms of tuberculosis: silicotuberculous bronchoadenitis **Silicotuberculosis:** Fine knot Large-node (silicotuberculoma) massive
0-1	Control			Bronchitis	Fast progressive	
Nodular	Small round blackouts	Bilateral	I, II	Bronchiolitis		
p	Nodules up to 1.5 mm	1. A small amount of shadows 2. Moderate amount of shadows 3. Multiple shadows		Emphysema of the lungs I, II, III degree	Slowly progressive	
q	Nodules ranging in size from 1.5 to 3 mm	1. A small amount of shadows 2. Moderate amount of shadows 3. Multiple shadows		Pulmonary insufficiency I, II, III degree	Regressive	
r	Knot sizes from 3 to 10 mm	1. A small amount of shadows 2. Moderate amount of shadows 3. Multiple shadows		Pulmonary heart: Compensated Decompensated I, II, III degree	Later development	
	Interstitial (small shades of irregular shape)	Bilateral diffusion	I, II			
s	Linear and mesh changes	1. Indistinctly expressed				

		2. Moderately expressed. Pulmonary drawing is determined. 3. Multiple shadows. Pulmonary drawing is not differentiated				**Pneumonia:** Acute, chronic I, II, III degree Bronchiectasis Bronchial asthma Spontaneous pneumothorax Rheumatoid arthritis Neoplasm
t	Heavy changes	1. Indistinctly expressed 2. Moderately expressed. Pulmonary drawing is determined. 3. Multiple shadows. Pulmonary drawing is not differentiated				
u	Coarse changes with small irregular spotted and linear shadows	1. Indistinctly expressed 2. Moderately expressed 3. Multiple irregular				
	Nodal (large rounded or irregularly shaped darkening with clear or indistinct contours on a nodular or interstitial background)	Double-sided or one-sided	III			
BUT	Small-knot - the largest diameter of the knots from 1 to 5 cm	Distribution area no more than 5 cm				
IN	Large-knot - the largest diameter of the knots is from 5 to 10 cm	The area of distribution is not more than 1/3 of the pulmonary field				

FROM	Massive - the largest diameter of the nodes is more than 0 cm	The area of distribution is not more than 1/3 of the pulmonary field				