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Study the Results of Treatment of Patients with Lung Abscess Using Modern Endobronchoscopy

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Abstract: New technologies in the diagnosis and treatment of purulent-inflammatory lung diseases have made it possible to slightly reduce the incidence over the past decades, which is confirmed by existing literature publications, but the search for the most effective and low-traumatic treatment options is extremely relevant. Among the minimally invasive methods of treating purulent lung diseases, in our opinion, treatment methods using endobronchial sanitation and catheterization of purulent cavities are of no small importance. We set ourselves the task of developing the optimal method of treating purulent lung diseases, using minimally invasive methods and maximum efficiency. For this purpose, we preferred to use the positive properties nasotracheobronchial purulent catheterization.

Keywords: nasotracheobronchial catheterization, acute abscesses and gangrene, exudate, bronchial biopsy.

Actuality

The diagnosis of acute abscess and gangrene of the lung is made on the basis of clinical and radiological data. Mandatory radiographyleights in 2 projections. In typical cases, narentgenograms clearly identify 1 or several cavities of destruction, most often with a horizontal fluid level and perifocal inflammatory infiltration of the lung tissue.

Radiography plays a leading role in the diagnosis of lung abscess. The X-ray picture is described in the work of L. S. Rosenstrauch etal. Thanks to them, the radiological semiotics of this disease has been developed quite fully, although computed tomography, which has appeared in recent decades, undoubtedly has significantly higher diagnostic characteristics with the possibility of clarifying the localization and size, thickness of the pyogenic capsule, the nature of the contents and concomitant changes in the parenchyma.

A transbronchial biopsy in patients with destructive lung diseases checks the pathological process and excludes malignant and specific lung injuries. The complex use of endoscopic methods is associated with a positive clinical result in all patients with lung destruction.

Authors Pinchuk TP, et al. (2017) provide an assessment of diagnostic and therapeutic bronchoscopy in patients with purulent-destructive pulmonary diseases. We analyzed the diagnosis and treatment of 34 patients with purulent-destructive pulmonary diseases, including small-focus destruction (14) and lung abscesses (19). 33 patients underwent diagnostic fibrobronchoscopy (FBS) using cyst biopsy and transbronchial biopsy. Therapeutic endoscopy included bronchial sanitation, peribronchial administration of antibiotics (5), and transbronchial drainage of the abscess (14). Atrophic bronchitis and citatrial infection? deformities of the 2nd-3rd segment of the bronchi were detected in 81.8% and 15.2%, respectively. A transbronchial biopsy confirmed malignancies (15.2%) and pulmonary tuberculosis (6.1%). Peribronchial

administration of amikacin in patients with мелкоконтурнымsmall-contour pulmonary destruction and transbronchial drainage of abscesses accelerates the recovery of lung tissue and complete recovery.

The article of the author Mondoni M. (2019) presents a paper describing a new technological approach for the diagnosis of lung lesions - robotic bronchoscopy. Robotic technology, which was introduced and expanded more than 20 years ago, has been a major breakthrough in many surgical and endoscopic procedures. The Monarch ™ system consists of a robotic outer shell with an internal telescopic endoscope, both of which have 4-position steering. The system uses electromagnetic navigation to control an external electromagnetic field generator. The doctor uses a small hand-held controller to guide the robotic scope to the affected area. The endoscope has continuous optical capabilities, a separate suction channel and a 2.1 mm working channel. Compared to other navigation models (such as endobronchial ultrasound, EMN, cone beam CT) that are associated with flexible white-light instruments, the robotic endoscope is specifically designed to improve access to the lung periphery and for PPL sampling. Therefore, a preliminary conventional flexible bronchoscopy is always necessary to examine the central airway in order to exclude possible synchronous lesions and remove bronchial secretions. Improved access and direct viewing of the peripheral airway may be a key advantage of this method over other guidance methods in combination with conventional bronchoscopes. Notably, this added value is not due to the small diameter of the instrument, but rather to the improved structural support provided by the outer casing, telescopic capability, and 4-way steering of both the external and internal endoscope, allowing entry into the airway at a sharp angle. Applying positive end-of-exhalation pressure (PEEP) can encourage further movement of the instrument in the bronchial tree. Robotic bronchoscopy shows the ability to hold the endoscope in a locked curved position, facilitating placement of biopsy instruments on the target without straightening during sampling. This technical feature is crucial for improving diagnostic accuracy and for therapeutic purposes based on the use of flexible ablation sensors in inoperable patients. This new landscape in PPL diagnostics can form the basis for the future of bronchoscopic control, creating a modern robotic perspective.

Pleural puncture, drainage of the pleural cavity with drains, local administration of enzymes, antibiotics, antiseptics, proteolysis and fibrinolysis inhibitors remain traditional methods of local surgical treatment of acute pleural empyasпротеолиза и фибринолиза. New antiseptics, disinfectants, antibacterial and immunotropic drugs, methods of physical and electrochemical influence on the infected pleural cavity are being introduced into practice. According to some authors, the predominant method of treating acute pleural empyasias is conservative, and local therapy is crucial [Ovchinnikova N.A., Rakhmanova D. S. 2019; Huang X, Ding L, Xu H. 2019].

Endobronchial suppuration is observed in children with prolonged bacterial bronchitis, bronchiectasis and cysticfibrosis. However, no study directly compared the results of bronchoscopy and bronchoalveolar lavage under these conditions in the same center using the same methods and with common community pathogens.

Research objective

To evaluate the use of endobronchial interventions in the diagnosis and treatment of patients with lung abscess.

Materials and methods:

We analyzed the data of examination and treatmentof 9,2 patients with purulent lung diseases of various etiologies who were treated in the purulent surgical department of the clinical base of the Bukhara State Institute in 2019-202 29-2022.

Depending on the treatment method, all patients were divided into 2 groups: comparison group I and main group II. The control group I, in turn, in accordance with the objectives of the study and depending on the type of treatment measures, was divided into three subgroups: those who

received the traditional method of treatment-conservative, antibacterial, restorative and symptomatic (undergroup I A), conservative treatment and санационнаяrehabilitation bronchoscopy (subgroup I B), conservative treatment with transtachial drainage purulent focus(subgroup Ib). In the second main group3, the above-mentioned traditional conservative method of treatment was supplemented with nasotracheobronchial drainage of the purulent focus of the lung in 3 to 8 patients.

Based on the goal and task, the results obtained for the study Igroup I of patients with purulent lung diseases, it was decided to conduct the following studies in patients with purulent lung diseases.

For this purpose, we examined 53 patients with HPL in a complex of treatment, who, in addition to traditional conservative treatment, underwent daily endobronchial rehabilitation with antibacterial and diluent drugs. The effectiveness of the used and proposed clinical methods for treating suppurative lung diseases was evaluated by the duration of bronchopulmonary symptoms, general symptoms of intoxication, dynamics of the size of the purulent-destructive cavity, and the value of the total bed-day.

ПоложениеThe patient's position and anesthesia technique wereи performed as noted above. A Gi bkIbronchoscope with a size of 5.2 mm was wiredито the tracheae through the nose,larynx, голосовand vocal cords, and under theивisual controlем, theend of the bronchoscopewas directed to the main bronchus of the affected lung. The campaign, if necessary, was sanitized by the lumenof the bronchus. The bronchoscope was extended to the maximumней near areaand bronchial svandsha, taking into account the bronchial lumen. Wireandlasl rehabilitation of the bronchialoго tree. иMaterial for bacterialoго research, ifnecessary, and for cytological research was taken from the tsa and radiation isolation и для цитологичиского. An enzymeи бронхов испольсы (Lidase,Trypsin) was used for bronchial, sanation, and an antibiotic was used for dilution,и takinginto accountthe sensitivity.

In subgroup 1B, laboratory indicators of signs of endogenous intoxication from peripheral blood (hemoglobin concentration, leukocytosis, ESR, LII, LI, MSM), the qualitative composition of sputum microflora, and the duration of the patient's stay in the hospital were also studied as criteria for assessing the condition of patients. At the time of admission and during treatment, the condition of patients was assessed by clinical signs, according to laboratory and instrumental examination methods, as well as using X-ray research methods.

Analysis of the results of intoxication indicators in patients with purulent lung diseases IIof the comparison group II revealed the following changes (Table1).

Table 1. Dynamics of intoxication indicators in patients with purulent wounds lung diseases IIof comparison group II (n=53)

Indicators	Observation time				
	Admission day	3 day	7 day	14 day	20 day
t^0 bodies	39,3±0,41	38,2±0,13*	37,8±0,14*	36,9±0,14	36,6±0,20*
L of blood $\times^{109}$/l	9,9±0,46	8,4±0,45*	7,4±0,39	7,0±0,31	6,6±0,25
MSM units	0,199±0,010	0,168±0,007**	0,152±0,009	0,126±0,005**	0,114±0,006***
LII ed	2,4±0,06	1,9±0,08*	1,7±0,07	1,4±0,05	1,2±0,04***
ESR mm / h	45,8±1,66	40,4±1,52*	34,1±1,22*	27,2±1,11***	15,2±0,62***

Note: * - differences from the previous day's data are significant (*- P<0.05, * * - P<0.01, * * * - P<0.001)

As can be seen from the table, on the first day of treatment, the body temperature of patients averaged 39,3,3±0,41^{0}C. The average white blood cell count was 9.99±0.4646 x^{109}/l. The volume of average molecules averaged 0.199±0.010 units. Similarly, there was an increase in LII and ESR.

On the third day of treatment, there was a slight decrease in body temperature from 38.22±0.1313 to 37.8±0.14, the number of white blood cells decreased to an average of 8.4±0.45×^{109}/l. The volume of average molecules averaged 0.168±0.007 units. There was a decrease in the indicators of LII and ESR to 1.9±-0.08 and 40.4±-1.52, respectively.

By the seventh day of treatment, patients in the comparison group with purulent lung diseases remained slightly subfebrile (37.8±0.14 ^{0}S). At the same time, for all indicators of intoxication of the body: L, MSM, LII and ESR of blood, their further decrease was noted, that is, there was a tendency to normalize– 7,4±0,39×10^9; 0,152±0,009; 1,7±0,07; 34,1±1,22 accordingly. By the fourteenth day of treatment, these figures, although they tended to further decrease, remained above the norm.

With further treatment and observation, by the twentieth day, all the analyzed intoxication indicators, except for blood ESR, were within the normalrange.

The next characteristic criteria for assessing the purulent process in the lungs was the determination of the level of microbial contamination, the identification of the species composition of microflora. The species composition of microflora seeded from sputum of patients with purulent lung diseases was revealed.

In most cases, 31 patients were seeded with pathogenic staphylococcus, including 14 (19.4%) in the form of monoculture and 17 (23.6%) in associations. In 28 cases, Escherichia coli was sown, which in 10 (13.9%) cases was present as a monoculture and in 18 (25.0%) as part of microbial associations. Proteus was the next most frequently detected species: in 16 cases, it was seeded in 7 (9.7%) cases as a monoculture and in 9 (12.5%) cases as part of microbial associations. This was followed by enterococci detected in 14 cases, 7 (9.7%) in the form of monocultures and associations, respectively, streptococci in 7 cases, 4 (5.5%) in monocultures and 3 (2.8%) in associations. Pseudomonas aeruginosa was seeded in 2 (2.8%) patients as a monoculture and in 1 (1.4%) as part of microbial associations.

When analyzing control X-ray images and MSCT of the chest, it was found that in patients IIof group II on the day of admission, the dimensions of the cavities of the purulent focus of the lung were identical as Iin group I. Table 2 shows this, the figures of both groups on the day of admission did not significantly differ. In dynamics, during the entire follow-up period, the size of the purulent focus cavity gradually decreased, but the rate of cavity decline in patients of group II опредили чем Iwas determined by the results of group I. By 18-20 days of treatment, the size of the cavities was reduced to 3.1±0.35cm, i.e. by 45.6% of the initial size, which in patients Iof group I during these periods terms were equal to 3.8+0.36 cm. 55.1% of the original size of the adviser.

Table #2. Dynamics of reduction in the size of abscess cavities IIin group I I compared to group I

Groups of patients	Size of the cavity, cm				
	Day of admission	3 days	7 days	14 days	20 days
Control Group I II	 6,9±0,36 6,8±0,66	 6,7±0,46 5,9±0,26	 5,8±0,43 5,2±0,28	 4,9±0,32 4,5±0,34	 3,8±0,36 3,1±0,35

Studies показателей of SpO indicators$_{in\ 2}$% of patients IIin group I and I revealed the following:: On the day of admission, patients IIof group I and I also had SpO_2% values significantly lower than the norm - 87.6%±0.2. In the course of treatmentSpO$_{,\ SpO2\ values}$tended to normalize compared Ito Group I with slightly faster rates.

Table #3. Dynamics of pulse oximetry indicators II of group I I compared to I Group I

Patient groups	SpO index$_2$ %				
	Day of admission	3 days	7 days	14 days	20 days
Control Group I II	 88,2%±0,1 87,6%±0,2	 88,3%±0,5 87,9%±0,2	 88,9%±0,4 88,3%±0,5	 90,1%±0,3 91,2%± 0,6	 92,2%±0,7 94,1%±0,9

Notes:-Where * is the significance of differences ($p<0.05$) in the size of the destruction foci between the HPS for the time periods shown in the table.

Вуьthe third day of treatment, the dynamicий growth показателей of SpO2 indicators$_2$, in contrast to Igroup III, showed unreliable positive dynamics in patients of group I-I. During treatment on days 7-10 and 14, there was a significant positive dynamics, reaching 91.2%±0.6, by day 20 up to 94.1%± 0.9. As shown in table 3.

Although the dynamics of SpO2 indicators$_{in}$ IIgroup I was faster than Iin group I, it was insignificant.

The average duration of inpatient treatment IIin subgroup II was 18±2.1.

It should be noted that out of 31 patients IIin group II, due to prolonged daily bronchoscopy, 16 (23.52%) patients had varying degrees of catarrhal tracheobronchitis. Most of them developed in the area of tracheal bifurcation in 13 (19.11%) cases. In 2 (2.94%) patients, a slight hoarseness of voice appeared by 17-18 days. All of them were stopped after appropriate conservative treatment.

Thus, our analysis of the results of the study of patients II in group II revealed the following:

- In HPL, in patients IIof group IIдоминирует , St.aureus and proteus also dominate mainly from the pathogenic microfloraaureus и протеус.
- When conservative treatment with the use of endobronchial sanitation and antibiotic therapy is an effective method than conservative treatment.
- All indicators of intoxication and dynamics of reduction in the size of purulent cavities when used in the complex treatment of endobronchial sanitation with antibiotic therapy accelerates the time of normalization, which shows an advance from IGroup I by 2-3 days.
- The average duration of conservative treatment of HPL with endobronchial rehabilitation is: patients IIof group II are 18±2.1 days, which is 2-3 days ahead of Igroup I..

It should be noted that although there are some advantages of treatment with endobronchial sanitation used IIin group II patients, this method has some disadvantages that we were not satisfied with:

- Daily bronchoscopic examination for 20 days has its own difficulties.
- Long-term daily bronchoscopic examination may contribute to an increase in complications during manipulation, due to irritation and trauma of the vocal cord, trachea and bronchi in the form of: tracheobronchitis up to 23.52%, hoarseness of the voice up to 2.94% of cases.

Due tounsatisfactory results of treatment IIof group II patients, we decided to search for a more modern minimally invasive method of treatment. For this purpose, we decided to study the

effectiveness of treatment of HPL using trancheobronchial drainage of the purulent focus through microtrachestomy in the following subgroup of patients.

Conclusion: Analysis of the literature data of recent years shows an increase in the number of patients with severe and complicated forms of acute purulent-destructive lung diseases. Data from the authors of studies show that the percentage of pulmonary-pleural complications in lung abscesses ranges from 30 to 70%, and the frequency of gangrenous forms from 28 to 74 %. The mortality rate also remains high, ranging in general from 12.7% to 77.8% in various forms of purulent-necrotic process.

Currently, the treatment of wound infection is based on the use of medications. But pathogenic bacteria, which are of great importance in the etiology of purulent surgical pathology, have significant virulence, have bio-variability and antibiotic resistance. Currently available antibacterial agents do not give the proper effective effect. In the treatment of acute and chronic abscesses, light administration of antibiotics by parenteral and enteral routes is ineffective due to the practical unavailability of drugs in the abscess cavity where there is no vascular system. Economic costs in the treatment of patients with purulent lung diseases with a complication of bronchial fistula are increasing, which significantly undermines the state budget of the surgical hospital. This indicates the need to review the provision on the exclusive use of antibiotics and switch to a more reasonable strategy and tactics for treating purulent-septic lung diseases, as well as to develop more effective methods for emptying abscess cavities from purulent secretions and infections. The development and widespread use of new methods of minimally invasive, low-traumatic methods in the complex treatment of purulent lung diseases is a priority in the treatment of this contingent of patients. The results obtained showed that one of the ways to solve this problem is nasotracheobronchial drainage of purulent cavities of the lung.

New technologies in the diagnosis and treatment of purulent-inflammatory lung diseases have made it possible to slightly reduce the incidence over the past decades, which is confirmed by existing literature publications, but the search for the most effective and low-traumatic treatment options is extremely relevant.

Currently available known methods of treating patients with purulent lung diseases with complicated bronchial fistula are not always sufficiently effective.

References:

1. Афроськин В.А., Пигачев А.В., Киреева Е.М. и др. Лечение острых абсцессов легких//XLV огарёвские чтения.-2017.-С. 275-280
2. Баландина И.А., Амарантов Д.Г. Использование торакоскопии в лечении ограниченных острых эмпием плевры // Грудная и сердечно-сосудистая хирургия. 2009. № 2. С. 38-41.
3. Баринов, О. В. Микробиологический мониторинг больных с эмпиемой плевры / О. В. Баринов, Т. Н. Суборова, А. В. Саламатов // Вестн. Рос. воен.-мед. акад. - 2010. - № 1. - С. 156-159.
4. Сафоев Б.Б., Ярикулов Ш.Ш., Икромов Т.Э. Влияние различных доз ультрафиолетовый лучей на резистентности патогенные микроорганизмы в эксперименте (in vitro). Тиббиётда янги кун - Бухоро, 2020. №4(33) — С. - 129-131. (14.00.00; № 22)
5. Сафоев Б.Б., Ярикулов Ш.Ш. Подавление резистентности микрофлоры под воздействием раствора диметилсульфоксида при лечении гнойно-хирургических заболеваний мягких тканей // Биология ва тиббиёт муаммолари - Самарканд, 2021. - №2 (127). - С. - 125-130. (14.00.00; №19) 14
6. Мирсолиев Шахзод Гуломович. Лапароскопическая Хирургия Осложнений Хронических Заболеваний Желчного Пузыря// RESEARCH JOURNAL OF TRAUMA

AND DISABILITY STUDIES// Volume: 01 Issue: 10 | Oct – 2022 ISSN: 2720-6866. С.-214-222

7. Мирсолиев Шахзод Гуломович. Современное Хирургическое Лечение Хронических Желчнокаменных Болезней// RESEARCH JOURNAL OF TRAUMA AND DISABILITY STUDIES// Volume: 01 Issue: 10 | Oct – 2022 ISSN: 2720-6866. С.-223-230
8. Makhmudova G.F. Age-related clinical,anatomical and morphological features of malignant tumors of the cervix// Journal of science and technology//2021.-P.-475-480
9. Guljamol Fazliddinonvna Makhmudova, Adkhambek Uygunovich Nurboboyev.Treatment of mechanical jaundice via the modern way// Scientific progress, 2021.-№6.-P.530-537
10. Nurboboyev A.U., Makhmudova G.F. Miniinvazive approach in the complex treatment of tumor and stone etiology of mechanical jaundice// International journal on Orange technology// Vol 3. Issue 9. Sep.2021.-P. 85-90
11. Махмудова Г. Ф., Темирова, Д. В., &Баротова, Ш. Б. (2021). Бачадон бўйни хавфли ўсмаларининг ёшга хосхусусиятлари //Academic research in educational sciences // 2(5).-Б.-186-196. https://doi.org/10.24411/2181-1385-202100871
12. Maxmudova G.F.,Soxibova Z.R., Mamedov U.S., Nurboboyev A.U. Fertil va keksa yoshli ayollarda bachadon bo'yni xavfli o'smalari tahlili (Buxoro viloyatida)//Oriental Renaissance: Innovative, educational, natural and social sciences//-2021.-V 8.-B. 175-184.
13. MG Fazliddinovna, NA Uygunovich, ND Faxriddinovna The modern way of diagnosis of cervical pathology in women with uterine fibroids via the colposcopy//Web of scientist: international scientific research journal.-3(02), 1017-1027, 2022.
14. А.У. Нурбобоев, Г.Ф. Махмудова, А.Ф.Махмудова.Обсуждение Результатов Лечения Больных С Желчнокаменной Болезнью, Осложненной Механической Желтухой //Central Asian journal of medical and natural sciences//-2022.- 3 (3), 273-280.
15. GF Makhmudova. Colposcopic analysis of cervical pathology in women with uterine fibroids // Scientific progress.-2022.-3 (1), 289-296.
16. NA Uygunovich, MG Fazliddinovna, SZ Rakhmonovna. Laparoscopic Methods in the Diagnosis and Treatment of Emergency Surgical Diseases of the Abdominal Cavity // European Multidisciplinary Journal of Modern Science//-2022.- 4, 196-202.
17. G. F., M. ., & F. Sh., X. . (2022). Pathomorphological Changes Occurring in the Spleen as a Result of External and Internal Factors. International journal of health systems and medical sciences, 1(5), 132–137.
18. Fazliddinovna, M. G. . (2023). Oncopsychology of Patients with Breast Cancer after Treatment. Scholastic: Journal of Natural and Medical Education, 2(2), 111–116.
19. М.Р. Турдиев, Г.Ф. Махмудова. Морфофункциональные изменения, происходящие в селезенке в результате действия внешних и внутренних факторов// Тиббиётда янги кун» №11(49), 2022, 466-474.
20. Makhmudova Guljamol Fazliddinovna. (2023). Age- related factors in diagnosis of malignant neoplasms of the female genital area. IQRO JURNALI, 2(2), 675–682.
21. Нурбобоев Адхамбек Уйгунович, Махмудова Гулжамол Фазлиддиновна. (2023). Возрастные особенности в диагностики опухолей молочной железы. IQRO JURNALI, 2(2), 683–688.
22. Makhmudova Guljamol Fazliddinovna, Nurboboyev Adkhambek Uygunovich. (2023). Comparison of the results of morphological changes observed in the spleen under the influence of carcinogens in the experiment. IQRO JURNALI, 2(1), 273–278

23. Гафур Нормуродович Саидов, Учкун Гафурович Абдукаримов, Гулжамол Фазлиддиновна Махмудова. Эпидемиологические показатели первично-множественных опухолей (обзор литературы)// Биология и интегративная медицина// 2019№ 11 (39).-С.

24. Б.Б. Сафоев , А.У.Нурбобоев, Х.К. Турдиев, Г.Ф. Махмудова. (2022). ЗНАЧЕНИЕ ДИАГНОСТИЧЕСКОГО МЕТОДЫ ПРИ АБСЦЕССЕ ЛЕГКОГО. Uzbek Scholar Journal, 11, 170–178

25. U., N. A., & F., M. G. (2023). Morphofunctional Changes of the Spleen Under the Influence of Various Factors in Postnatal Ontogenesis. Web of Semantic: Universal Journal on Innovative Education, 2(5), 228–233.

26. F., M. G., & U., N. A. (2023). Age-Related Morphological and Morphometric Parameters of the Spleen in Postnatal Ontogenesis. Web of Semantic: Universal Journal on Innovative Education, 2(5), 234–242

27. Г. Ф, М. ., & А. У, Н. . (2022). Выбор Современного Метода Лечения При Опухолях Билиопанкреотической Области, Осложненных Механической Желтухой. AMALIY VA TIBBIYOT FANLARI ILMIY JURNALI, 1(6), 45–51