BRITISH MEDICAL JOURNAL

British Medical Journal

Volume 2, No.6, November 2022

Internet address: http://ejournals.id/index.php/bmj
E-mail: info@ejournals.id
Published by British Medical Journal
Issued Bimonthly
3 knoll drive. London. N14 5LU United Kingdom
+44 7542 987055

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British Medical Journal Volume-2, No 6

PROSPECTIVE ANALYSIS OF THE DIAGNOSIS AND TREATMENT OF PATIENTS WITH MALIGNANT TUMORS OF VARIOUS LOCATIONS COMPLICATED WITH HYDROTHORAX

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Abstract: In everyday practice, the decision of the doctor constantly collides with the desire of the patient. Sometimes the only method of treatment that would really alleviate the condition cannot be carried out due to the categorical refusal of the patient. Most often, patients are diagnosed with chronic diseases such as chronic hepatitis and pyelonephritis, without clinical and biochemical disorders. When detecting changes in blood tests, patients were not included in the study group.

Hydrothorax, due to metastatic lesions of various tumors, is the most common complication. About the frequency of hydrothorax in various extrapulmonary malignant tumors in humans, conflicting data are given in the special literature. There are many reasons for this, including those related to the different diagnostic capabilities of the health service in different regions of the world. Perhaps the difference in the prevalence of primary tumors themselves in different countries and social groups also plays a certain role. In particular, it depends on the nature of cancer risk structuring depending on the professional, population and ethnic composition of the population.

In everyday practice, the doctor's decision constantly clashes with the desire of the patient. Sometimes the only method of treatment that would really alleviate the condition cannot be carried out due to the categorical refusal of the patient. In accordance with the achievements of modern medicine, determining that any pathology has a common cause of occurrence, associated with a violation of the body's regulation function at various levels. For the development of a malignant tumor in a particular organism, certain regulatory systems (hormonal, immunological, etc.) are violated. These changes in the future also affect the nature of the course of the disease.

Materials and methods. To test our hypothesis, we studied the result of treatment, including shortness of breath, depending on the nosological unit, complicated by malignant pleural effusion. To solve the set tasks, we carried out a prospective analysis of the diagnosis and treatment of 404 patients with malignant tumors of various localizations complicated by hydrothorax, who were treated from 2017 to 2021 (Table 1.) in the RSNPMTSOiR in Tashkent and in the Surkhandarya branch of the RSNPMTSOiR.

Table 1.
Distribution of patients with pleural effusion depending on the primary localization.

Primary pathology	Number of patients
Mammary cancer	178 (44,1 %)
Malignant tumors of the lungs and pleura	60 (14,9 %)
Tumors of the urogenital zone	54 (13,3%)
Tumors of the skin, bone and soft tissues	58 (14,4%)
Tumors of the lymphoid system	54 (13.3%)
Total	404 (100%

All patients were previously examined and treated for malignant tumor lesions of various localizations. Of the 404 patients, 64 (15.8%) continued treatment aimed at achieving local control of the primary tumor.

In the group of patients with malignant tumors of the urogenital zone, the main pathology was ovarian cancer in 38 and testicular cancer in 16 patients. T - cell lymphoma was observed in 24 patients, 30 patients were diagnosed with Hodgkin's disease.

306 patients previously received a full course of special treatment for malignant tumors of organs and tissues or received antitumor treatment, in 98 cases hydrothorax was a manifestation of the disease.

Among the patients included in the study, 322 (79.7%) patients were female, 82 (20.3%) male.

All patients, depending on the treatment, were divided into six groups (table 2.). As the main group, a group of patients was designated who underwent the surgical method of pleuro-peritoneal shunting developed in our center (82/20.3% of patients).

Table 2.
Distribution of patients with malignant neoplasms of various localizations, complicated by hydrothorax, depending on the treatment group.

No	Treatment Methods	Number of patients
1	Pleuro-peritoneal shunting (PPS) Intrapleural chemotherapy (IPCT)	82 (20,8%)
2	Polychemotherapy (PCT)	88 (21,8%)
3	Chemo-radiation therapy (CRT)	34 (8,5%)
4	PCT + intrapleural chemotherapy (IPC)	74 (18,3%)
5	HLT+VPH	48 (11,9%)
6	Intrapleural chemotherapy (IPCT)	76 (18,8%)
Total		404(100%)

Considering that the study was aimed at determining the optimal approach for the treatment of patients with malignant neoplasms complicated by hydrothorax, all other groups are conditionally designated as control groups.

Courses of polychemotherapy and chemoradiotherapy were carried out according to accepted standards, depending on the primary focus and the form of the lesion. Cisplatin 100 mg, fluorouracil 1.0 g were administered intrapleurally. In combination 125 - 250 mg hydrocortisone suspension. Cisplatin and fluorouracil were often given concomitantly, either as a single injection or as an alternation of injections, with each aspiration of fluid from the pleural cavity. A suspension of Hydrocortisone at a dose of 125-250 mg, depending on the clinical features of the course of the disease, was administered simultaneously with chemotherapy drugs. In some cases, when an increased viscosity of the exudate was noted during the previous evacuation, a solution of hyaluronidase (Lidase) was injected intrapleurally at a dose of 64-128 IU. See the respective chapters for the purpose of administering hydrocortisone and lidase.

Radiation therapy was carried out on the basis of RSNPMTSOiR or its branches (Tashkent, Bukhara, Nukus). The goal of radiation therapy in this case was to reduce the formation of the mediastinum and hilar region (40 cases), lungs (24 patients), chest wall and pleura (18 patients), and thus affect the course of hydrothorax.

Drainage of the pleural cavity according to Bulau was performed according to the standard method in 56 (13.9%) patients who received chemoradiotherapy and polychemotherapy (see in the corresponding Section).

The age of patients significantly affects both the outcome of the disease and the possibility of curation. The average age of the patients included in our studies was 46.2ё4.4 years (Table 3.).

Patients from 30 to 50 years old 318 (78.7%) prevailed. Over 50 years old (the oldest patient was 61 years old) and under 30 years old (the youngest patient was 16 years old) made up only 86 (21.3%) patients. By localization, the youngest patients were among those with malignant tumors of the skin, bone and soft tissues, and the oldest were more with pathology of the mammary glands.

Table 3
Distribution of patients with malignant neoplasms of various localizations, complicated by hydrothorax, depending on age.

Treatment group	Age of patients Up to 30 years	Up to 40 years	Up to 50 years	Over 50 years old
PCA n=84	14 (16,7%)	42(50%)	26 (30,9%)	2 (2,4%)
PCT n=88	22 (25%)	34 (38,6%)	24 (27,2%)	8(9,1%)
CLT n=34	2 (5,9%)	20 (58,8%)	12 (35,3%)	-
PCT + HPHT n=74	6 (8,1%)	32 (43,2%)	30 (40,5%)	6(8,1%)
CLT + HPHT n=48	4(8,3%)	40 (83,3%)	4 (8,3%)	-
HPHT n=76	6(7,9%)	24(31,6%)	30(39,5%)	16(21,1%)
Total n=404	54 (14,9%)	192(47,5%)	126 (31,2%)	32 (7,9%)

As is known, the duration of the disease history also affects the outcome of the disease. (Table 4.). Long-term compression of the lung by pleural effusion makes it impossible to straighten it even after the evacuation of the exudate. Since fibrosis develops in the lung tissue due to the tumor itself and near tumor (paracancrotic) pneumonia, thereby reducing the volume of ventilated tissue. Also, in malignant tumors, the release of a large amount of fibrinolysis products and hyaluronidase acid into the liquid leads to the formation of adhesions and the mooring of the pleural surface easily, thereby binding the tissue.

Compression of the lung leads to displacement of the heart with possible cardiac dysfunction, displacement of the opposite lung and an increase in respiratory failure.

The accumulation of sputum in the respiratory tract causes and maintains inflammatory processes (tracheobronchitis, pneumonia, subsequent retrograde infection of the pleural cavity).

The intensive progression of the disease indicates the aggressiveness of the tumor process, its expansiveness. Conversely, slow development, less intense progression, indicates a relatively favorable course of the disease. The patients included in our study had a history of a malignant tumor process from 6 months to 5 years.

Table 4

Distribution of patients with malignant neoplasms of various localizations, complicated by hydrothorax, depending on the duration of the anamnesis.

Treatment group	Duration of anamnesis					
	Up to 6 months	Up to 9 months	Up to 12 months	More than 12 month	Up to 3 year's	Up to 5 year's
PCA n=84	38(45,2%)	22(26,2%)	18(21,4%)	4 (4,8%)	2 (2,4%)	-
PCT n=88	38(43,2%)	24(27,3%)	10(11,4%)	8(9,1%)	4 (4,5%)	4(4,5%)
CLT n=34	4(11,8%)	12(35,3%)	6(17,6%)	6(17,6%)	4(11,8%)	2(5,9%)
PCT+WPHTn=74	28(37,8%)	20 (27%)	14(18,9%)	12(16,2%)	-	-
XLT + HPHTn=48	10(20,8%)	6(12,5%)	10(20,8%)	12(25%)	6(12,5%)	4(8,3%)
HPHT n=76	28(36,8%)	22(28,9%)	16(21,1%)	8(10,5%)	1(2,6%)	-
Total n=404	146(36,1%)	106(26,2%	74(18,3%)	50(12,4%)	18(4,5%)	10(2,5%

From the data in Table 4 it can be seen that 324 (80.2%) patients had a short, up to one year, history of a malignant tumor. In 30 (7.4%) patients, the accumulation of pleural fluid coincided with the progression of tumor growth, after a year of onset of the disease. In 50 (12.4%) patients, it was not possible to achieve local control during the treatment.

Since a malignant pleural effusion is a manifestation of a widespread tumor process, the possibility of bilateral involvement of the pleura, as well as the pericardium and peritoneum, should be assumed.

Bilateral pleural effusion indicates the transformation of a local systemic process. It has a more severe course, pronounced clinical signs, and a short life expectancy with unsatisfactory quality. In this connection, we did not exclude from the study patients with bilateral lesions, on the contrary, we tried to include this category of patients in the study as much as possible. Thus, the study included patients with unilateral pleural effusion 362 (89.6%) patients, bilateral 42 (10.4%) patients (Table 5.).

Table 5

Distribution of patients with malignant neoplasms of various localizations, complicated by hydrothorax, depending on the amount of hemithorax.

No	Treatment methods	Unilateral defeat	Bilateral defeat
1	PCA n=84	78 (95,1%)	6 (7,1%)
2	PCT n=88	84 (95,5%)	4 (4,5%)
3	CLT n=34	30 (88,2%)	4 (11,8%)
4	PCT + HPHT n=74	66 (89,2%)	8 (10,8%)
5	CLT + HPHT n=48	38 (79,2%)	10 (20,8%)
6	HPHT n=76	66 (86,8%)	10 (13,2%)
	Total n=404	362 (89,6%)	42 (10,4%)

Normally, the pleural cavity contains only a few milliliters of pleural fluid. If the volume of fluid increases so much that it can be seen radiologically, this is considered a deviation from the norm. Knowing that the distribution of fluid in the pleural cavity occurs in accordance with the law of gravity and that the lung retains its shape when compressed, it is easy to imagine how excess pleural fluid will be distributed. Initially, under the influence of gravity, the fluid descends to the base of the pleural cavity and collects between the lower surface of the lung and the diaphragm, especially behind, where the pleural sinus is deeper. Accumulating, the fluid spreads posteriorly, anteriorly and laterally into the costophrenic sinuses. When an even larger amount of fluid enters, it rises, as if covering the bulge of the lung, and gradually descends into a cone. Fractional removal of pleural fluid in combination with ultrasound and X-ray monitoring of its amount gives us an idea of the intensity of accumulation (Table 6.).

Table 6

Distribution of patients with malignant neoplasms of various localizations, complicated by hydrothorax, depending on the intensity of accumulation of pleural fluid.

Treatment methods	The intensity of the accumulation of pleural fluid per week ≤ 0,5 л	≤1,0 л	≤1,5 л	≤ 2,0 л	≥2,0 л
PCA n=84	70(83,3%)	8 (9,5%)	4(4,8%)	2(2,4%)	-
PCT n=88	68(77,3%)	14(15,9%)	4(4,5%)	2(2,3%)	-
CLT n=34	22(64,7%)	6(17,6%)	4(11,8%)	-	2(5,9%)
PCT + HPHT n=74	58(78,4%)	8 (10,8%)	4 (5,4%)	2 (2,7%)	2(2,7%)
CLT + HPHT n=48	32(66,7%)	8(16,7%)	6(12,5%)	-	2(4,1%)
HPHT n=76	56(73,7%)	10(13,2%)	6(7,9%)	2(2,6%)	2(2,6%)
Total n=404	306 (75,7%)	54(13,4%)	28(6,9%)	8(1,9%)	8(1,9%)

The implementation of daily monitoring of the accumulation of pleural fluid due to the X-ray or ultrasound method due to many reasons was not possible to implement. Since, an assessment for a small amount of liquid did not always give an objective result.

From the data in the table it can be seen that most often the intensity of fluid accumulation in the pleural cavity was up to 1.0 liters per week, which is also considered quite large. Only in 10.7% of cases, the accumulation of fluid had a very high intensity and amounted to more than 1.0 liters. Such intense accumulation was typical for patients with lesions of the urogenital zone and with a large area of lesions in pleural mesothelioma.

The presence of moderate or large amounts of pleural fluid is associated with certain symptoms and characteristic changes that can be detected during a physical examination of the patient. Symptoms of pleural effusion are largely determined by the pathological process that caused it (Table 7.).

Table 7
Distribution of patients with malignant neoplasms of various localizations, complicated by hydrothorax, depending on the identified symptoms.

No	Symptoms	Identified cases
1	Shortness of breath	404 (100%)
2	Pain	192 (47,5%)
3	Dry cough	166 (41,1%)
4	Weakness	322 (79,7%)
5	Heartbeat	198 (49%)
6	Anorexia	144 (3 6,6%)
7	Weight loss	108 (26,7%)

Although patients with malignant tumors have many symptoms, when complicated with hydrothorax, shortness of breath and chest pain become the dominant complaints. Although only a part of the patients complained of shortness of breath, all patients felt a lack of air of varying severity. Patients often do not pay due attention to symptoms such as anorexia, weight loss, weakness, and others, and when complaints are presented, only after direct questioning are these symptoms revealed.

Pleural effusion leads to a decrease in the volume of all parts of the lung. A small pleural effusion causes displacement rather than compression of the lung and should not significantly affect lung function. Although it is logical that the intensity of accumulation and volume of fluid correlate with the severity of shortness of breath, in our studies such a pattern was not revealed.

Sometimes patients with a moderate amount of fluid suffered with severe shortness of breath and vice versa, some patients with a large amount of fluid in the pleural cavity noted moderate shortness of breath. A more likely explanation for this phenomenon may be the influence of a complex of pathological changes in the lungs (concomitant damage to the lung tissue) and the body as a whole, as a violation of the function of the cardiovascular system, anemia, etc.

Most often, the localization of pain corresponded to the localization of the tumor or metastatic lesion. Ultrasound in the projection of the area of pain revealed pathological thickening or inclusions of the pleura.

The general condition of the patient is the sum of positive and negative factors affecting the physical status of the patient. Although most of the signs, such as pain, weakness, poor appetite, are the sum of objective and subjective signs, since the same stimulus can cause a different reaction depending on the psychotype of patients, it significantly affects the quality of life.

For the possible selection and implementation of certain treatment tactics, the general condition of patients significantly affects (Table 8.).

Table 8

The distribution of patients with malignant neoplasms of various localizations, complicated by hydrothorax, depending on the general condition of the examined patients during hospitalization.

Treatment methods	General state			
	Satisfactory	Medium heavy	Heavy	Extremely heavy
PCA n=84	46 (56,1%)	32(39%)	6(7,1%)	-
PCT n=88	58(65,9%)	18(20,5%)	8(9,1%)	4 (4,5%)
CLT n=34	22(64,7%)	6(17,6%)	4(11,8%)	2 (5,9%)
PCT + HPHT n=74	46(62,2%)	22 (29,7%)	4 (5,4%)	2 (2,7%)
CLT + HPHT n=48	32(66,6%)	8(16,7%)	8(16,7%)	-
HPHT n=76	42(55,3%)	18(23,7%)	8(10,5%)	10(13,2%)
Total n=404	246 (60,9%)	104(25,7%)	38 (9,4%)	18 (4,5%)

As can be seen from the table above, more than half of the cases of observation, despite the neglect of the pathological process, the general condition of the patients was assessed as relatively satisfactory. An extremely serious condition, due to the neglect of the pathological process, the severity of concomitant diseases and signs of general pathology, was observed in only 4.5% of cases. Such a small number of severe and extremely severe patients is due to the fact that, in general, patients in this category did not undergo specific treatment and the main indication for inclusion in the study groups was a life expectancy of at least 8 weeks. The inclusion of 8 patients with an extremely severe course of the disease was carried out at the beginning of research, which later had to be abandoned, since an objective assessment of the results of treatment in this category of patients is extremely difficult.

Another significant factor affecting the course of treatment is the presence of concomitant chronic diseases of organs and systems in the studied patients (Table 9.).

Table 9

Distribution of patients with malignant neoplasms of various localizations, complicated by hydrothorax, depending on concomitant diseases in the examined patients.

Treatment methods	Accompanying illnesses				
	Ischemic heart disease	GB	CG	HP	Other
PCA n=84	4 (4,8%)	10 (11,9%)	22(26,2%)	8 (19%)	5(11,9%)
PCT n=88	4(4,5%)	10(11,4%)	26(29,5%)	5(11,4%)	7(15,9%)
CLT n=34	2(5,9%)	6(17,6%)	18(52,9%)	3(17,6%)	1(5,9%)
PCT + HPHT n=74	2(2,7%)	4(5,4%)	30(40,5%)	12(32,4%)	3(8,1%)
CLT + HPHT n=48	6(12,5%)	6(12,5%)	14(29,2%)	4(16,7%)	-
HPHT n=76	14(18,4%	10(13,2%)	8(10,5%)	4(10,5%)	-
Total n=404	32(7,9%)	46(11,4%)	118(29,2%)	36(17,8%)	16(7,9%)

Here: IHD - ischemic heart disease; GB - hypertension; HCG - chronic hepatitis; HP - chronic pyelonephritis;

Results. Most often, patients are diagnosed with chronic diseases such as chronic hepatitis and pyelonephritis, without clinical and biochemical disorders. When detecting changes in blood tests, patients were not included in the study group. In the sixth column of the table, patients with concomitant diseases, encountered in isolated cases, diabetes mellitus, such as glaucoma, rheumatoid arthritis, Leriche's syndrome, dermatosis, gastroduodenitis, proctitis, varicose veins of the extremity, etc. Were included.

References:

1.Arseniev A.I., Nefedov A.O., Levchenko E.V. et al. Optimization of methods of treatment of surgical complications in lung cancer. Issues of oncology. 2012; 58(5):674-679.

2.Borisova T.N., Tkachev S.I., Ivanov S.M. The role of radiation therapy in the treatment of patients with pleural mesothelioma. Modern Oncology. 2020; 22(4): 109-114.

3.Tillyashaikhov M.N. Organization of the oncological service of Uzbekistan at the present stage and prospects for further development // Clinical and experimental oncology. -2017.-№1.- P.5-7.

4.Yaduta R.T. Treatment of metastatic pleurisy: criteria for choosing surgical tactics / R.T. Yaduta, K.G. Zhestkov, B.G. Barsky // Emergency doctor. - 2015. - No. 1. - S. 23-26. 125

5.Bray F., Ferlay J., Soerjomataram I., Siegel R.L., Torre L.A., Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. C.A. Cancer J. Clin. 2018;68:394-424.

6.Bleyer A., Welch H.G. Effect of Three Decades of Screening Mammography on Breast-Cancer Incidence. N. Engl. J. Med. 2012;367:1998-2005

7.Bibby A.C., Tsim S., Kanellakis N., Ball H., Talbot D.C., Blyth K.G., Maskell N.A., Psallidas I. Malignant pleural mesothelioma: An update on investigation, diagnosis and treatment. Eur. Respir. Rev. 2016;25:472-486.

8.Gordon CE, Feller-Kopmann D, Balk EM, Smetana GW. Pneumothorax following thoracocentesis: a systematic review and metaanalysis. Arch Int Med. 2010;170:332-339.

9.Grijalva CG, Zhu Y, Nuorti JP, et al. Emergence of parapneumonic empyema in the USA. Thorax. 2011;66:663-668.

10.Herrera Lara S., Fernández-Fabrellas E., Juan Samper G., Marco Buades J., Andreu Lapiedra R., Pinilla Moreno A., Morales Suárez-Varela M. Predicting Malignant and Paramalignant Pleural Effusions by Combining Clinical, Radiological and Pleural Fluid Analytical Parameters. Lung. 2017;195:653–660.

11.Kindler H.L., Ismaila N., Armato S.G., Bueno R., Hesdorffer M., Jahan T., Jones C.M., Miettinen M., Pass H., Rimner A., et al. Treatment of Malignant Pleural Mesothelioma: American Society of Clinical Oncology Clinical Practice Guideline. J.Clin. oncol. 2018;36:1343-1373.

12.Koegelenberg C.F.N., Shaw J.A., Irusen E.M., Lee Y.C.G. Contemporary best practice in the management of malignant pleural effusion. Ther. Adv. Respir. Dis. 2018;12:1-13.