

CLINICAL CASE REPORTS

SEQUENTIAL BRONCHOPLASTIC LOBECTOMIES IN COMPLEX TREATMENT FOR SYNCHRONOUS BILATERAL MULTIPLE PRIMARY NON-SMALL CELL LUNG CANCER: A RARE CLINICAL CASE

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ABSTRACT

Today, lung cancer (LC) occupies a special place in the oncological general morbidity among the male population both in Russia and in foreign countries. Despite modern diagnostic capabilities provided for modern physicians, steadily frequent cases of triggering and exclusion are more common in patients older than 60–65 years. Surgery is the main treatment for early-stage non-small cell lung cancer (NSCLC), but as the disease progresses, unfortunately, its effectiveness decreases. The strategy of diagnosing and treating patients with one NSCLC has been developed and worked out for a long time and does not cause any difficulties, but in the presence of two or more tumors, especially when they are located in both lungs, the correct choice of therapy is determined by many additional factors. This article describes the rare use of extended bronchoplastic upper lobectomy as a surgical component of the complex treatment of a patient with bilateral synchronous NSCLC. Based on our own observational data, it can be claimed that the use of modern therapeutic principles in combination with surgical intervention allows achieving satisfactory long-term results in the treatment of patients with primary multiple NSCLC.

The interest of the presented observation is based on the fact that it contains a description of a rare and unique application of sequential extended bronchoplastic upper lobectomy as a surgical component of the complex treatment of a patient with bilateral synchronous NSCLC, which we have not found analogues in the literature. We have shown that the consistent use of modern therapeutic modalities makes it possible to achieve satisfactory long-term results in the treatment of a locally advanced disease.

Keywords:

lung cancer, non-small cell lung cancer, primary multiple cancer, synchronous cancer, surgical treatment, multimodal approach

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ПОСЛЕДОВАТЕЛЬНЫЕ БРОНХОПЛАСТИЧЕСКИЕ ЛОБЭКТОМИИ В СТРУКТУРЕ КОМПЛЕКСНОГО ЛЕЧЕНИЯ СИНХРОННОГО ДВУХСТОРОННЕГО ПЕРВИЧНО-МНОЖЕСТВЕННОГО НЕМЕЛКОКЛЕТОЧНОГО РАКА ЛЕГКОГО: РЕДКОЕ КЛИНИЧЕСКОЕ НАБЛЮДЕНИЕ

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РЕЗЮМЕ

На сегодняшний день рак легкого (РЛ) занимает лидирующее место в структуре общей онкологической заболеваемости среди мужского населения как в России, так и на территории зарубежных стран. Несмотря на современные диагностические возможности, имеющиеся в арсенале у врачей, неуклонно растет показатель запущенности и смертности, а больше половины новых случаев данной патологии диагностируется у пациентов старше 60–65 лет. Хирургическое вмешательство является основным методом лечения ранних стадий немелкоклеточного рака легкого (НМРЛ), однако по мере прогрессирования заболевания, к сожалению, снижается эффективность его применения. Тактика диагностики и лечения пациентов с одним НМРЛ давно разработана и отработана, не вызывает никаких затруднений, а вот при наличии двух и более опухолей, особенно при их локализации в разных легких, правильный выбор терапии обусловлен множеством дополнительных факторов. Как правило, больные с местно-распространенным синхронным НМРЛ часто получают только консервативную терапию, а для тех пациентов, кто всё-таки подвергается хирургическому вмешательству, факторы прогноза клинического течения до сих пор непонятны. В данной статье приведено описание редкого применения расширенной бронхоспластической верхней лобэктомии в качестве хирургического компонента комплексного лечения больного двухсторонним синхронным НМРЛ. Основываясь на данных нашего собственного наблюдения, можно утверждать, что применение современных терапевтических принципов в комплексе с хирургическим вмешательством, позволяет добиться удовлетворительных отдаленных результатов лечения пациентов с первично-множественным НМРЛ.

Интерес представленного наблюдения заключается в том, что оно содержит описание редкого и уникального применения последовательной расширенных бронхоспластических верхних лобэктомий в качестве хирургического компонента комплексного лечения больного двухсторонним синхронным НМРЛ, аналогов которого нами не было найдено в литературе. Нами показано, что последовательное применение современных терапевтических модальностей позволяет добиться удовлетворительных отдаленных результатов лечения местно-распространенного заболевания.

Ключевые слова:

рак легкого, немелкоклеточный рак легкого, первично-множественный рак, синхронный рак, хирургическое лечение, мультимодальный подход

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RELEVANCE

Lung cancer (LC) remains the main cause of cancer death among the male population, more than half of new cases of which are diagnosed in patients older than 60–65 years [1–3]. Acknowledging that the surgical method of treatment is the main one in the treatment of early stages of non-small cell lung cancer (NSCLC). However, as the process progresses, the risk of developing distant metastases increases and the effectiveness of the surgical method decreases. The principles of treatment of patients with one NSCLC have been developed for a long time and do not raise questions, and in the presence of two or more tumors, especially in two lungs, the correct choice of treatment depends on many factors. First of all, in the absence of extra-thoracic metastases, the bilateral process can represent both independent primary tumors and intrapulmonary metastatic foci [4]. If in the first case the operation will benefit the patient, then in the second, unfortunately, it will not affect or may even negatively affect the outcome of the disease. The available data in the literature indicate the complexity of the issue under consideration. In a number of studies, it was reported that there was no long-term survival of patients who underwent surgical interventions, which is why there was an opinion about the poor prognosis of multifocal tumors, regardless of the probability of different biological behavior of tumors [5]. The median overall survival of patients with synchronous primary multiple lung cancer in the early stages, in the presence of contraindications to surgical treatment as a result of multimodal conservative therapy, now reaches about 31 months [6].

The ability to distinguish primary multiple lung tumors in order to determine indications for radical surgical treatment is constantly being improved using molecular genetic studies [3]. The previously developed criteria for primary multiple tumors do not help patients with synchronous lung cancer: about 50.8–57.9 % of tumors have a similar morphological histotype, and the correct assessment of the involvement of mediastinal lymph nodes (N+) before surgery is difficult [7]. However, despite the uncertainty regarding management tactics in recent studies, long-term survival of patients with bilateral synchronous NSCLC after surgical treatment has been reported [8; 9].

In this article, we present a clinical observation of a patient with bilateral central primary multiple NSCLC who underwent complex therapy with a good long-term treatment result. Despite the initial prevalence of tumor processes, radical organ-preserving surgical treatment became the basis of success. In the available literature, we have found no reports of sequential performance of extended bronchoplastic upper lobectomy on both sides as part of the complex therapy of primary multiple NSCLC.

The purpose of the study was to report on the clinical case of a patient with bilateral central primary multiple NSCLC who underwent complex therapy with a good long-term treatment outcome.

CLINICAL CASE REPORT

Patient K., 61 y.o., admitted to the National Medical Research Centre for Oncology with complaints of dry cough and shortness of breath during physical activity. It is known from the anamnesis that he considers himself sick since March 2018, when he noticed a change in the nature of the cough, which became dry, tearing and especially disturbed the patient at night. After performing a computed tomography of the thoracic cavity organs (CT TCO) at the place of residence, central cancer of the upper lobe of the left lung was suspected, and therefore the patient independently contacted our center.

The CT scan of the chest from 04/19/2018: central peribronchial nodular cancer of the left lung 5.0 × 5.5 cm with lesions of the upper lobe bronchus and distal sections of the left main bronchus. Central peribronchial nodular cancer of the right lung 2.2 × 2.7 cm with lesions of the upper lobe bronchus. Hypoventilation and pulmonitis of the upper lobes of both lungs. Lymph nodes were determined anteriorly from the aortic arch 2.2 cm, retrocaval 1.3 cm (Fig. 1).

On fibrobronchoscopy (FBS) from 04/28/2018: trachea and carina without features. On the right, the lumen in 3 is slit-like narrowed due to external pressure with signs of submucosal infiltration; on the left, the lumen of the upper lobar bronchus is blocked by an exophytic tumor by 4/5 (Fig. 2).

Histological conclusion: from B3 on the right, No. 40978-82/18 – foci of squamous cell carcinoma; from the upper lobar bronchus on the left, No. 40983-88/18 – foci of squamous cell carcinoma.

Based on the examination, the diagnosis was made: primary multiple synchronous cancer with damage to both lungs (classification of lung cancer according to the TNM system of the 7th revision):

1. Cancer of the left lung central peribronchial nodular form with lesions of the upper lobe and distal left main bronchus cT2N2M0, stage III, cl.gr.2.
2. Cancer of the right lung central peribronchial nodular form with lesions of the upper lobe bronchus cT1N2M0, stage IIIA, cl.gr.2. Cancer of the right lung central peribronchial nodular form with lesions of the upper lobe bronchus cT1N2M0, stage IIIA, cl.gr.2.

According to the recommendations of the council of the National Medical Research Centre for Oncology, taking into account the loco-regional prevalence of the tumor, the first stage of treatment was decided

to conduct 3 courses of induction chemoimmunotherapy with a combination of cisplatin – 80 mg/m² and gemcitabine – 1600 mg/m² with recombinant tumor necrosis factor-thymosin alpha-1 – 150,000 IU/m², which were carried out in the period from 05/08/2018. to 07/26/2018 [10].

After completing the courses of induction chemotherapy, a control CT of TCO was performed 08/10/2018 (Fig. 3, 4). Its effectiveness was evaluated using the criteria of RECIST 1.1, which showed the presence of a partial response, and therefore a decision was made on surgical treatment.

Criteria for choosing the side of the lesion for the first stage of surgical treatment: taking into account the assumed greater prevalence of the tumor of the left lung (transition to the main bronchus, possible involvement of the left pulmonary artery in the tumor

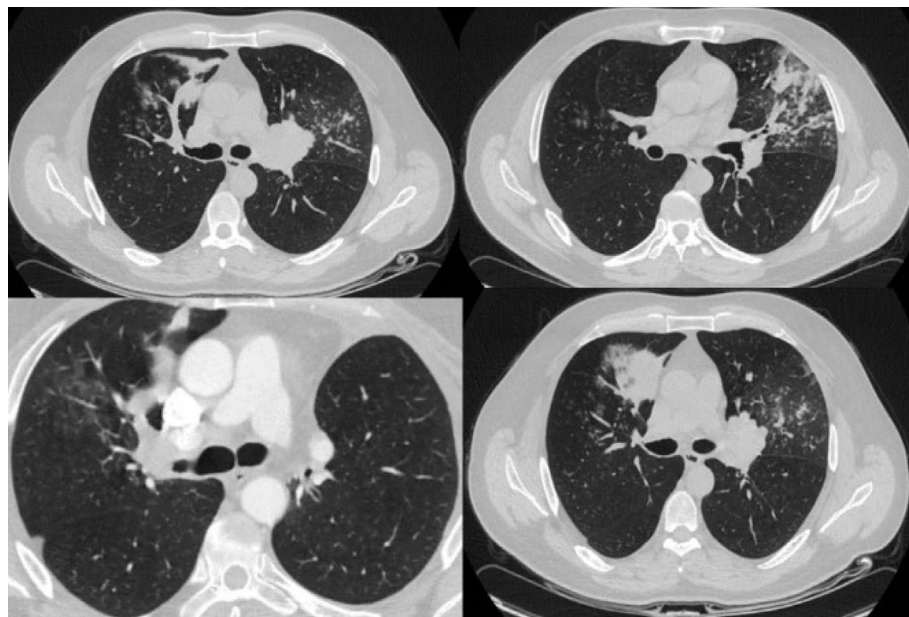


Fig. 1. CT of TCO from 04/19/2018 before the start of treatment.

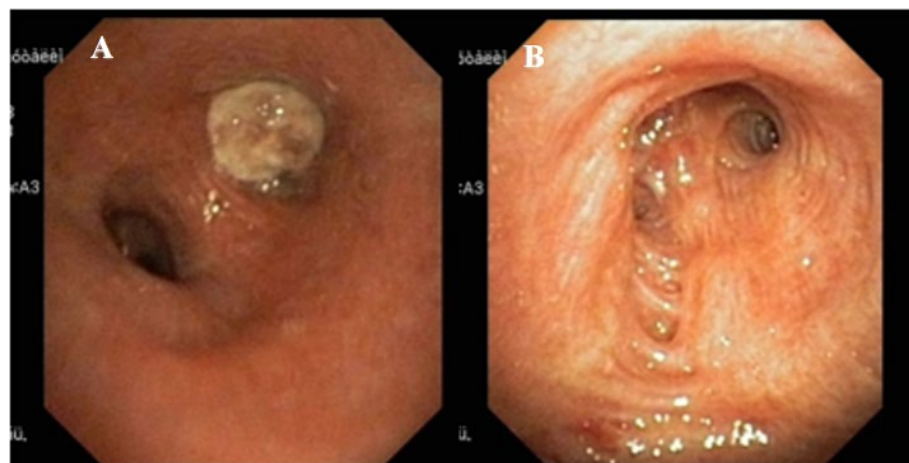


Fig. 2. FBS of 04/28/2018 before the start of treatment.

process, as well as the presence of complete atelectasis of the upper lobe), it was decided to perform the first stage of bronchoangioplastic upper lobectomy on the left.

On 09/03/2018, an extended upper bronchoplastic lobectomy was performed on the left with resection of three cartilaginous semicircles of the left main bronchus and lower lobar bronchus at the level of the mouth of B6 with the formation of a direct inter-bronchial anastomosis between the main and lower lobar bronchi "end to end". The postoperative period proceeded without complications. Postoperative histological analysis: highly differentiated squamous cell carcinoma with keratinization and foci of necrosis; along the line of bronchial resection at a distance of 2 cm from the visible boundaries of the tumor without signs of tumor growth; in 5 out of 6 bronchopulmonary lymph nodes, squamous cell carcinoma metastases; there are no metastases in the lymph nodes of the lung root, the "aortic window" and the tracheal bifurcation zone.

After 3 weeks, the patient underwent a control examination, including CT of TCO, FBS: without signs of progression, the anastomosis is stable, without signs of inflammation.

On 10/30/2018, an expanded bronchoplastic upper lobectomy was performed on the right with circular resection of two cartilaginous semicircles of the right main and one semicircle of the intermediate bronchi and the imposition of an end-to-end interbronchial anastomosis. The postoperative period proceeded without complications with early activation of the patient. Postoperative histological analysis: moderate differentiated squamous cell carcinoma with keratinization; bronchial resection lines without signs of tumor growth; in the lymph nodes of the root of the right lung, paratracheal metastases of squamous cell carcinoma on the right.

Thus, based on the results of morphological examination, the final diagnosis was established: primary multiple synchronous cancer with damage to both lungs:

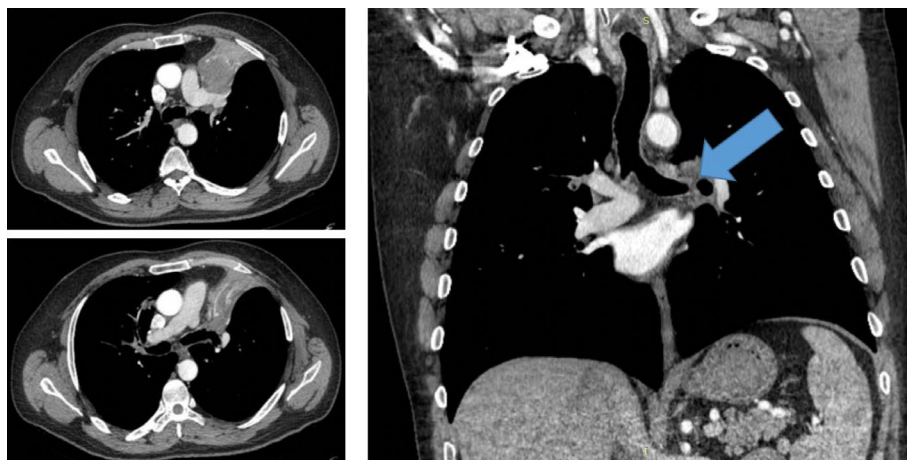


Fig. 3. CT of TCO from 08/10/2018 (after induction chemoimmunotherapy).

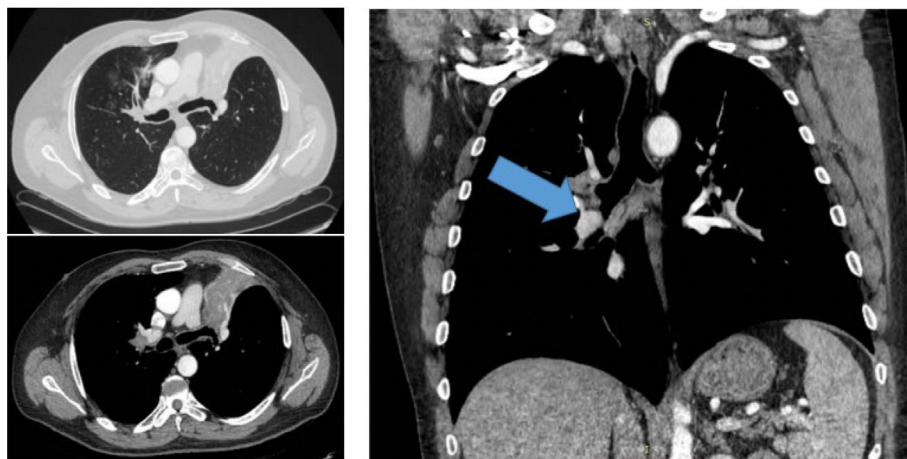


Fig. 4. CT of TCO from 08/10/2018 (after induction chemoimmunotherapy).

1. Cancer of the left lung central peribronchial nodular form with lesions of the upper lobe and distal left main bronchus pT2N1M0 G1R0, stage IIB cl.gr.2.
2. Cancer of the right lung central peribronchial nodular form with lesions of the upper lobe bronchus pT1N2M0G2R0, stage IIIA, cl.gr.2. Cancer of the right lung central peribronchial nodular form with lesions of the upper lobe bronchus pT1N2M0G2R0, stage IIIA, cl.gr.2.

By the decision of a consultation consisting of a thoracic oncologist, radiologist and chemotherapist and taking into account the effectiveness of induction chemotherapy, it is recommended to conduct 4 courses of adjuvant chemotherapy with a combination of carboplatin AUC 5–6 and gemcitabine 1000 mg/m² with an interval of 28 days.

From 11/24/2018 to 01/31/2019, the patient underwent 2 courses of adjuvant chemotherapy, which were accompanied by the development of an adverse toxic reaction in the form of grade 4 thrombocytopenia, which required transfusion of thromboconcentrate. From 03/01/2019 to 04/15/2019, 2 more courses of adjuvant chemotherapy were carried out, but with a 50 % reduction in the dose of gemcitabine.

After completion of chemotherapeutic treatment from 05/20/2019 to 06/14/2019 on the Novalis TX linear accelerator, Varian, by means of 7 static conformal fields using the IMRT mode, consolidating radiation therapy was performed on the lung root area and mediastinum ROD-2 Gr. to SOD = 46 Gr. From 07/25/2019 to 08/08/2019, 3D conformal IMRT radiation therapy was performed on the area of cervical-supraclavicular lymph nodes on both sides, ROD –3Gr. 5 fractions per week up to SOD = 39 isoGr. No radiation reactions were noted, the treatment was carried out satisfactorily.

The patient came for a follow-up examination in November 2020 on the FBS from 11/02/2020: condition after bronchoplastic upper lobectomy on the left and right. Anastomoses are consistent, without signs of inflammation and deformation. The lobular and segmental bronchi are freely passable on both sides.

02/02/2022 (40 months after surgery on the left lung, 39 months after surgery on the right lung), the patient underwent a control CT scan of the TCO: the condition is satisfactory, there are no complaints. There were no data for relapse of the disease.

DISCUSSION

The prognosis of the disease in patients after surgery for bilateral synchronous primary multiple NSCLC is quite favorable. According to the authors, the median overall survival in operations of any volume reached 52 months [5], and the 5-year survival rate was 38 % [8], which is several times higher compared to survival in stage IV NSCLC. Among all operations, as a rule, bilateral lobectomies are performed sequentially in approximately 1/3 of patients. After performing bilateral lobectomies or lobectomies with contralateral sublobar resections, the 3- and 5-year overall survival reaches 84.5 % and 75.0 %, respectively [9]. It was also found that the most important predictors of poor prognosis are: the degree of involvement of intra-thoracic lymph nodes N2 compared to N0 and N1 and unilateral localization of tumors compared to bilateral. The best survival rates of patients with bilateral NSCLC are due to a greater probability of true primary multiple lesion, taking into account the distance between the "tumor fields" without obvious signs of hematogenous metastasis. Morphological similarity of tumors as a prognostic factor is not associated with worse survival, on the contrary, a tendency to improve the survival rates of patients with tumors of the same histological structure was revealed.

In order to study the influence of these prognostic factors, Tanvetyanon and colleagues evaluated survival in 2 groups of patients, divided depending on the presence of risk factors such as gender, age, advanced stage of the disease and tumor localization. It was revealed that patients without risk factors had significantly better survival than patients with more than one adverse risk factor. The 5-year survival rate was 82 % for patients with absent risk factors compared to 43 % for those with present risk factors [5]. Since an equally favorable outcome will not affect all patients, established prognostic factors are necessary for making clinical decisions. The interest of our report lies in the fact that it contains a description of the rare use of extended bronchoplastic upper lobectomy as a surgical component of the complex treatment of a patient with bilateral synchronous NSCLC. Our experience shows that consistent application of modern therapeutic modalities allows us to achieve satisfactory long-term results of treatment of a locally advanced disease.

CONCLUSION

The interest of our observation lies in the fact that it contains a description of a rare and unique application of sequential expanded bronchoplastic upper lobectomy as

a surgical component of complex treatment of a patient with bilateral synchronous NSCLC. It is shown that the consistent application of modern therapeutic modalities makes it possible to achieve satisfactory long-term results of treatment of a locally advanced disease.

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