

BRONHOBLOKATION'S COMPLICATIONS IN THE TREATMENT OF PNEUMOEMPYEMA

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Abstract

It was described features of use the bronchial valves in patients with pneumoempyema, techniques of procedure. We described the complications as sociated with using of bronchial valves, and methods of their elimination.

Keywords: pneumoempyema, bronchialvalve, bronchial fistula.

УСКЛАДНЕННЯ БРОНХОБЛОКАЦІЇ В ЛІКУВАННІ ПІОПНЕВМОТОРАКСУ

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Резюме

Розглянуті особливості використання бронхіальних оклюдерів у хворих на піопневмоторакс. Вказано методу процедури та виконані маніпуляції. Описано ускладнення, пов'язані із використанням бронхоблокаторів та методи їх усунення.

Ключові слова: піопневмоторакс, брохоблокатор, бронхіальний оклюдер, бронхіальна фістула.

ОСЛОЖНЕНИЯ БРОНХОБЛОКАЦИИ В ЛЕЧЕНИИ ПИОПНЕВМОТОРАКСА

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Резюме

Рассмотрены особенности использования бронхиальных окклюдеров у больных пиопневмотораксом. Указана методика процедуры. Описаны осложнения, связанные с использованием бронхоблокатора, и методы их устранения.

Ключевые слова: пиопневмоторакс, бронхоблокатор, бронхиальный окклюдер, бронхиальный свищ.

Pneumothorax occurs in 33.3% of patients with nonspecific infectious lung destruction [1, 5]. One of the pathogenic factors of chronic and pneumothorax is infringement of impermeability lung tissue, leading to the development of bronchial fistula [2, 4 and 7]. Successful closure of fistula makes surgical treatment of these patients more reliable and less lengthy [3, 6 and 7].

In our study involved 77 patients who performed thoracoscopic sanitation of pleural cavity and endoscopic bronchoblokation.

The indications for endoscopic bronchial fistula occlusion were: discharge air in pleural drainages after thoracoscopic operation and X-ray picture of the residual cavity, which does not disappear. Valve bronchoblokation was completed in 1- 2 days after operation. We used the endobronchial reverse valve, which made of rubber compound medical indifferent to the human body. The valve permits air and bronchial content to move away from residual cavity, during expiration and prevents their back motion during inspiration.

Endoscopic bronchial occlusion performed after it imaging by painting: it was introduced in pleural cavity during bronchoscopy through the drainage 20 ml of 3% hydrogen peroxide solution with a colorant in a ratio of 10: 1. Manipulation was performed under local anesthesia.

After identification bronchus associated with fistula, bronchoscope extracted and the valve of the desired diameter was placed at its end. The diameter of the valve exceeded the diameter of the bronchus 1,2 - 1,5 times. Bronchoscope with a valve administered orally in the tracheobronchial tree. The valve was fixed by biopsy forceps (conducted through the

working channel of bronchoscope) for the jumper installed into the bronchus until it stops. Then bronchoscope was brought away from valve, holding valve by the forceps (Fig. 1). During the coughing it seen as a valve petals open and release air (Figure 2). In case of adequate valve function bronchoscope was removed from the bronchial tree.

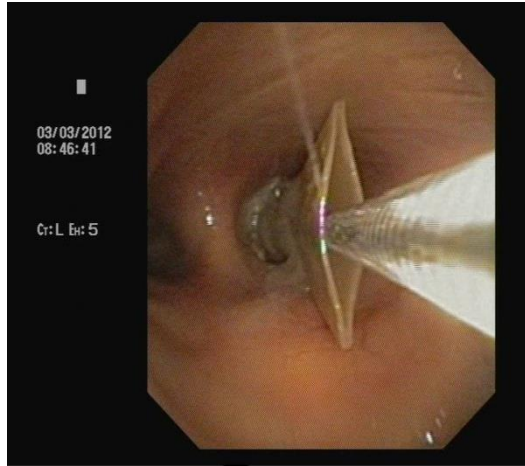


Fig.1. Installation of the valve.

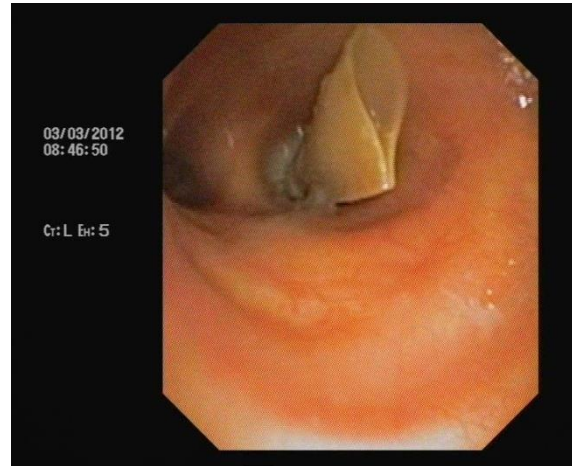


Fig.2. Valve petals release air.

The most common complication was purulent bronchitis - in 15 (19.5%) patients. This problem was due to valve operation features, the purulent contents of pleural cavity through a fistula penetrated tracheobronchial tree freely, but not get back that leads to its accumulation in the bronchial tree on the affected side, and sometimes in opposite lung. The suspicion of complication arose on the basis of patients complaints of difficulty breathing, increased temperature combined with increased white blood cell, scattered dry and moist wheezing during auscultation. The diagnosis was confirmed by X-ray and bronchoscopic examination.

Patients with bronchitis were performed therapeutic bronchoscopy on a regular basis under local anesthesia. Active aspiration of bronchial secretions and wash of the tracheobronchial tree with anti-inflammatory, agents, mucolytic and antibacterial agents were carried out under visual control. Manipulation was made every day.

Inhalations were also performed using nebulizer therapy. We used 2-4 ml 20% -acetyl cysteine solution and 2- 10 0.02% ml dekosan solution 2-4 times a day. Immediately before inhalation, bronchoscopy sanitation was performed with local introduction of 2 ml 2.4% eufillin for improving the penetration ability of drugs.

Next in frequency complication was overgrowth of granulation tissue in the area of valve in 5 (6.5%) patients. The growth of granulation tissue in these patients were detected

directly during removal valve, clinical manifests were absent. Granulation tissue was removed endoscopically immediately after valve deletion with histological examination. In all cases of histological examination was detected productive chronic inflammation with the formation of granulations.

In 3 (3.9%) patients was found valve's migration into the bronchial tree. Suspicion of this complication appeared in the case of recovery discharge air to drain and confirmed by the chest X-ray examination. We detected valve that has changed its location (this type of valve has the X-ray contrast element, which allows it to identify it's by X-ray). The reason of this complication was size mismatch of valve and bronchus diameter after disappearance the bronchitis and edema of bronchial wall. Only once marked valvemigration into pleural cavity in a patient with parts resection of the lung on the artificial respiration after the increasing oxygen pressure. This complication required re-installation of the valve with taking into account new conditions and detailed information workers of intensive care.

Thus, the valve bronhoblokation is effective and safety method in the treatment of patients with pneumoempyema. Possible complications of its use easily diagnose and eliminate, but this method is not widely used and requires further study.

JOURNAL ARTICLES:

Two to Seven Authors [List all authors]

[1] Early results of endoscopic lung volume reduction for emphysema /A.P.C. Yim [et.al.]// J ThoracCardiovasc Surg. - 2014. - Vol. 127. - P. 1564-1573.

[2] Fann, J.I. The use of endobronchial valve device to eliminate air leak / J.I. Fann, G.J. Berry, T.A. Burdon // Respir. Med. - 2006. - Vol. 100, № 8. - P. 1402 - 1406.

[3] Ferguson, J. S. Closure of a Bronchopleural Fistula Using Bronchoscopic Placement of an Endobronchial Valve Designed for the Treatment of Emphysema / J. S. Ferguson, K. Sprenger, T. Van Natta // Chest. - 2006. - Vol. 129. - P. 479 - 481.

[4] Terra R.M., Waisberg D., Almeida J.L.J (2008).Impact of videothoracoscopy in pleural empyema surgical treatment Chest Meeting Abstracts. - Vol. 134. - P. 790 - 803.

[5] Makarov V. V. Syrovaya A. O., Levashova O. L. (2016) Improvement of the puncture treatments methods of actuate pleural empyema Der Pharmacia Lettre. –. - Vol.8, № 9. – P. 213 – 216

[6] Mitchell, K. M. Endobronchial Valves for Treatment of Bronchopleural Fistula / K.M. Mitchell, T.M. Boley, S.R. Hazelrigg //Ann Thorac Surg.- 2006. -Vol. 81.-P. 1129-1131.

[7] Venuta F. Bronchoscopic Lung-Volume Reduction With One-Way Valves in Patients With Heterogenous Emphysema / F. Venuta // Ann Thorac Surg. - 2005. -Vol. 79.-P. 411-416.