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THE SPECTRUM OF THORACOSCOPIC INTERVENTIONS IN VARIOUS PATHOLOGIES OF CHILDREN

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Abstract

It is general knowledge that the thoracal operations are highly traumatic, whereas early activation of patients is required for rapid and complete recovery of lung function. Introduction of endoscopic surgery contributes to a complete solution to these problems.

During the last 5 years 31 thoracoscopic interventions were performed in patients aged from 3 to 18 years at the "Sourb Astvatsamayr" Medical Centre. Among these patients there were 19 boys and 12 girls. Patients were examined using the standard protocol: X-ray study of the chest (straight and lateral projections) followed, if necessary, by computer tomography (CT) of the chest, ultrasound examination of the chest, electrocardiogram (ECG), blood and urine tests. Operations were performed under general endotracheal anesthesia. Recently, the high epidural analgesia has been successfully used as a component of general anesthesia. Among the performed 31 surgical interventions 8 operations were of diagnostic character.

Thoracoscopy is irreplaceable for differentiation of various neoplasms of the chest. During 5 years, 15 patients (6 girls and 9 boys) with destructive pneumonia aggravated by such a complication as pyo-fibrinothorax were treated. In 6 patients the process was located in the left side, in 9 patients: in the right side of the chest.

The advantages of endoscopic surgery for various pathologies of chest in children are undeniable. Firstly, it is a good magnification and a good overview of the operative field, which enables a thorough operative exploration of the pleural cavity. Secondly, it is a non-traumatic surgical intervention that promotes early activation of patients and the rapid restoration of lung functions..

Keywords: thoracoscopy, endovideotechnology, destructive pneumonia, mediastinal tumor, decortication of lung.

INTRODUCTION

The founder of thoracoscopy is Professor Hans Christian Jacobeus from Stockholm University who used cystoscope for inspection of the pleural cavity in 1910. Likewise other fields of surgery, in thoracal surgery, the minimal invasive operations have been widely used simultaneously with development of endovideotechnology since the end of the 20th century. It is generally known that the thoracal operations are highly traumatic but at the same time the early activation of a patient is required for rapid and complete recovery of lung function. Introduction of endoscopic surgery contributes to a complete solution of these problems.

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"Sourb Astvatsamayr" Medical Centre is the unique medical institution in Armenia to have the Department of Pediatric Thoracic Surgery for treatment of various respiratory system pathologies in children.

MATERIAL AND METHODS

During the last 5 years, 31 thoracoscopic interventions were performed for patients between the ages of 3 to 18 years in the "Sourb Astvatsamayr" Medical Centre. The group embraced 19 boys and 12 girls. Patients were examined in compliance with the standard protocol: X-ray study of the chest (straight and lateral projections), computer tomography (CT) of the chest followed, if necessary, by ultrasound examination of the chest, electrocardiogram (ECG), blood and urine tests.

Operations were performed under general en-

dotracheal anesthesia. Recently, the high epidural analgesia has been successfully used as a component of general anesthesia. The patient is positioned on the healthy side. Equipment and tools of "Karl Storz" company (Germany) were used. Ten millimeter trocar was inserted into the pleural cavity through 1 cm skin incision, which is made in the 4-5th intercostal space along the posterior axillary line. Examination of pleural cavity was made. If necessary, one or two working trocars were inserted. At the end of operation the pleural cavity was drained through the incision for trocar.

Results and Discussion

Eight of 31 surgical interventions, which were done by us, had diagnostic character.

After revision of the pleural cavity thoracotomy was made in 2 patients:

- First: a girl of 15 years old with echinococcosis of the left lung festering and breaking into the pleural cavity; thoracotomy and echinococcectomy were performed;
- Second: a boy of 16 years old with polytrauma, disruption of inferior lobe of bronchus; thoracotomy, suturing of the bronchus were performed.

No injury of lungs was revealed in the remaining patients with contusion of the chest.

Application of thoracoscopy prevents futile thoracotomy for various injuries of the chest [*Koizumi K. et al., 2005; Rothenberg S., 2007*]. To this signify our 6 observations when after the trauma of chest opacity on the injured side was observed on the thorax X-ray and ultrasound examination revealed pleurorrhea. After the thoracoscopy moderate blood effusion was revealed in the pleural cavity without damage of the lung.

Thoracoscopy is irreplaceable for differentiation of various neoplasms of the chest [*Sigal Y., Grebnyov P., 1997*]. A thirteen years old girl was admitted to our clinic with diagnosis of mediastinal tumor. After additional examination the patient was operated. Left side thoracoscopy was applied and a 4 x 7 cm tumor was removed. Histopathological conclusion was neuroganglioma. The patient was discharged on the fourth day in a satisfactory condition.

For 30 years the Department of Thoracic Surgery of "Sourb Astvatsamayr" Medical Centre deals with one of the most important problems in children health: destructive pneumonia. Treatment of patients with pulmonary-pleural complications lasted long and sometimes hospitalization was more than a month, but in some cases it lasted several months. Multiple punctures of pleural cavity were done and the pleural cavity drained; this forced the patients to remain longer in bed.

During the last 5 years, 15 patients (6 girls and 9 boys) with such a complication of destructive pneumonia as pyo-fybrinothorax have been treated. In 6 patients the process was located on the left side, in 9 patients: on the right side of the chest. After the short course of intensive disintoxication, antibiotic therapy and stabilizing the general condition of the patient, we performed thoracoscopy, decortication, sanation and drainage of the pleural cavity under general anesthesia. Medical therapy was continued in the postoperative period. Drainage tubes were removed on the third or fourth day. The average duration of treatment was 16 days.

Six patients between the ages of 14 to 16 years old were operated for non-parasitic cysts of the lungs. Emergency thoracoscopy and inspection of the lung were performed for 4 patients with the picture of spontaneous, tense pneumothorax. All patients had ruptured cysts of the superior lobe of lung that were removed. In two patients routine thoracoscopic cystectomy was performed. No extraordinate features were recorded in postoperative period. Drainage tubes were removed on the second day. Hospital stay made 4 days.

Introduction of thoracoscopy provides the opportunity to recover physical activity of patients and respiratory function of lungs in a very short period [*Isakov Y. et al., 2003*].

Conclusions

The advantages of endoscopic surgery for various pathologies of chest in children are undeniable. Firstly, it is a good magnification and a good overview of the operative field, which enables a thorough operative exploration of the pleural cavity. Secondly, it is a non-traumatic surgical intervention that promotes early activation of patients and the rapid restoration of lung functions. Eventually, the above-mentioned leads to a rapid recovery and reduces the duration of hospital stay.

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