

## APPLICATION OF THE HYDROSURGERY SYSTEM AND PLASMAJET FOR THORACOSCOPIC DEBRIDEMENT OF PLEURAL CAVITY IN CHILDREN WITH FIBRINOTHORAX

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**Introduction.** Thoracoscopy became a favored modality in pediatric pleural empyema treatment. However, the factors affecting on outcome of thoracoscopic management remain unclear. Purpose of the study Demonstration of hydrosurgery system "Versajet" and the plasma unit "Plasmajet" during thoracoscopic treatment of children with pleural complications destructive pneumonia.

**Materials and methods.** 377 patients with a pneumonia was treated at the Speransky Children's Hospital in Moscow for the last 1 year. 62 patients (16.45%) from 377 required drainage of the pleural cavity.

14 patients from 1.6 to 15 years of age (mean,  $3.2 \pm 3.8$ ) with pleural empyema were operated -Thoracoscopic pleural cavity sanitation with hydrosurgery system (Versajet-2) Hydrosurgery system is a surgical instrument based on the impact of high-speed jet of water on necrotic and inflamed tissues, combining the advantages of acute cleansing tissue and processing them by pulsating water jet. The design of the evacuation tube and its close proximity to the liquid jet creates a local vacuum, which effectively removes fibrin and liquid contents by Bernulli effect. Informed consent was obtained from parents, and the procedure received approval from the local ethics committee.

**Results.** Recovery and rehabilitation was uneventful in 13 cases. 1 patient with empyema of the right pleural cavity and severe organic lesion of the central nervous system was treated in our hospital by thoracoscopic adhesiolysis. However, postoperative period was complicated by recurrence of pleural empyema and cortication of right lung. Rethoracoscopy was performed six days later after initial operation - thoracoscopic debridement of pleural cavity, decortications of the right lung by hydrosurgery system with good results after surgery.

Mean operative time was 90 minutes ( $\pm 15$  minutes). Drainage of the pleural cavity was removed 3-4 days after surgery. The childrens were discharged from the hospital on day 10 ( $\pm 1.2$  days). After application of argon plasma coagulation has been achieved complete aerostasis in 2 patients, hemostasis - in 1 patient.

Ultrasound and X-rays examination 4 months after surgery confirmed the absence of inflammation in the lung parenchyma and full lung reexpantion in all patients.

**Conclusions.** Application Hydrosurgical system during thoracoscopy, provide effective debridement of pleural cavity, decortications of the lung without damaging the lung parenchyma and create conditions for early rehabilitation of the compromised lung.