Resection and replacement of thoracic aorta during operations for lung cancer

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Abstract
Objective. In spite of the progress in thoracic surgery and oncology great mortality in lung cancer patients still persists and so the question of not only the early diagnosis but also the development of new techniques of surgical treatment. First experience of thoracic aorta resection and replacement in lung cancer patients was analyzed.

Method. Three patients (two men and one woman, 31, 50 and 54 years old) underwent lung resection with a simultaneous resection and replacement of the whole descending part of the thoracic aorta for locally advanced non small cell lung cancer. N0 status was diagnosed in one patient, N2 – in two. Two patients had adenocarcinoma, one – squamous cell carcinoma. Two patients underwent open-close thoracotomy previously.

Results. Left pneumonectomy with mediastinal dissection and thoracic aorta replacement was done in all patients. Extracorporeal circulation was used in one patient and in two patients resection and replacement of the aorta were fulfilled on the cross-clamped aorta below the left subclavian artery. There were no ischemic injuries during and after operations. In one patient chilothorax developed and was successfully treated conservatively. All patients were discharged in good condition for the chemoradiation therapy. Questions regarding diagnosis, indications, technical aspects of surgery and prognosis are discussed.

Conclusion. Simultaneous lung resection with thoracic aorta replacement in selected patients with lung cancer is possible with good immediate results in specialized surgical departments.

Editorial comment by A. Akopov
Lung cancer with infiltration of the aorta carries a poor prognosis, and thus surgical resection is contraindicated in these cases. Some studies have shown that long-term survival is possible after limited resection of the aortic adventitia along with the primary tumor. However, patients with localized tumor ingrowth and low node stage are expected to benefit from a combined resection of the lung and the involved aortic segment. This extensive procedure has been reported only anecdotally in surgical literature. Local tumor control can be achieved for primary non-small cell lung tumors with N1 or single level N2 disease; however, long-term results are limited by systemic relapse. The resection of the aorta was performed with cardiopulmonary bypass, simple clamping or temporary insertion of an aorto-aortal bypass graft. Chemotherapy should therefore be added routinely as part of the treatment protocol.

The authors of the paper “Resection and replacement of thoracic aorta during operations for lung cancer” presented three cases of patients with lung cancer and aorta invasion who underwent lung resection with whole descending thoracic aorta replacement. One patient was operated with the use of cardiopulmonary bypass; two patients had simple cross-clamping technique of the descending aorta, without cardiopulmonary support and passive shunts. Some features regarding patients selection, technical aspects of surgery and prognosis are discussed. This treatment modality still needs investigation and long-term follow-up in order be a recommended procedure.