

## Summary

Value of HRCT in the diagnostics of pulmonary complications of malignant haematologic diseases.

Early diagnosis is one of the essential conditions for successful therapy of haematologic malignancies and their complications. Imaging methods play an important role in their detection and patient's management. HRCT is the most contributing method in the diagnostics of pulmonary involvement, which is very common in this group of patients.

The aim of this thesis was to find out the potential of this method in the diagnostics of pulmonary complications in patients with haematologic malignancy. For this purpose were assessed 4 objectives: 1) comparison between HRCT and chest X-ray; 2) determination of capability of HRCT to make a specific diagnose; 3) definition of indication criteria for HRCT and 4) assignment of the suitable examination technique.

In the time period from January 2000 until December 2005 were performed 214 HRCT examinations of the lungs in the group of 162 patients with haematological malignancy and pulmonary symptomatology. 176 examinations were compared with chest X-ray, which was performed 48 hours or less before HRCT. Pulmonary lesion was discovered in 180 cases (84,1%). 123 findings were confirmed by another method (response to a specific therapy, cultivation, serology, BAL or histology). An infection lesion was diagnosed in 77 cases (62,6%). Remaining 46 (37,4%) lesions were non-infectious. The most frequent infectious lesions were mycoses (58,7%). The commonest mycosis was invasive aspergillosis (40% of all infections). The most common non-infectious lesion was graft versus host disease in patients after bone marrow transplantation (32,6% of all non-infectious lesions).

Sensitivity, specificity and positive predictive value of X-ray examination were high (79,8%, 96,4% and 98,8%). On the contrary the negative predictive value was low (56,2%). This discrepancy shows, that the advantage of HRCT is not only in better depiction of lesions but also in detection of lesions in symptomatic patients with false negative X-ray examination.

The highest chance to set the specific diagnosis is in invasive aspergillosis (80% of examinations performed in the first week of the disease showed parenchymal condensation with halo sign). Another case with possibility of relatively specific diagnosis is GVHD (mosaic pattern with air-trapping, which is typical for obliterative bronchiolitis, was discovered in 50% of patients). In case of non-specific findings is HRCT capable to confirm or exclude pulmonary involvement and narrow the differential diagnosis.

In infectious complications is HRCT indicated in immunocompromised patients with fever of unknown origin without response to an empirical therapy lasting more than 3 days. In non-infectious complications HRCT is indicated in patients with unclear X-ray findings. At persistent clinical suspicion is HRCT indicated in spite of negative X-ray examination.

Initial examination should be performed as routine examination supplemented with HRCT. Low-dose technique is suitable for follow up. This method reduces radiation exposure up to 12% of original value. Expiratory scans are essential in patients after bone marrow transplantation with suspicion of GVHD.