Virtual bronchoscopy was performed using multispiral 16-row CT scanners with endoscopic view regimen. Extemporaneous imaging was conducted in prone position and with both hands held up. The scanning area was from the thoracic inlet to the level of the posterior phrenicostal sinuses. If larynx and trachea pathologies were suspected, the upper tomographic border was at the level of mandible. The section thickness was 2 mm. The first series of scanning was made in the axial projection, followed by the multiplanar and 3D reconstructions of the tracheobronchial tree.

The obtained axial scans were loaded in the special application for virtual bronchoscopy, and after digital processing, the tracheobronchial tree images were displayed in 3D regimen. The program Endoviewer, which is a CT viewer in the endoscopic regimen, was used. 3D rendering using a virtual camera was performed in the lumen of the trachea or the bronchus. The internal surface of the airways was modeled as 3D images in prospect. Interactive navigation in the lumen was performed, and the trajectory control was conducted either in the scheduled line or in the manual regimen using a computer mouse.

- **Direct evidence** showing foreign occurrence is the mass in the transection of the bronchus when the lumen was navigated during virtual bronchoscopy. In this case, we can estimate the size, shape and surface of the foreign body and its relationship with the bronchus wall.

- **Virtual bronchoscopy**, in contrast to endoscopic bronchoscopy, was able to determine the condition of the bronchial tree proximal part and the distal part of the foreign body (in case of non-occlusion).

- **As indirect evidence** of the foreign body in VB we used the intake and break of the bronchus lumen (“block”) for further navigation.

**Methods:** 22 children with suspected bronchial foreign bodies and positive result of virtual bronchoscopy were included in the prospective study to evaluate the sensitivity of the method.

All patients underwent rigid respiratory optic tracheobronchoscopy. Detection of foreign bodies intraoperatively was considered as the true-positive result. 30 patients without history and clinical signs of foreign bodies were included in the calculation of virtual bronchoscopy specificity.

**Results.** The number of the true positive outcome made up 22 of 22 possible. The number of the false negative cases was none. The sensitivity of the method was 100%. The number of the true negative cases was 30 of 30 possible. There were no false positive cases in the present study. The specificity of the method was 100%.

**Conclusions.** Virtual bronchoscopy is a safe non-invasive diagnostic method that exhibits high diagnostic value in detecting bronchial foreign body in children. Virtual bronchoscopy can significantly reduce the number of unnecessary traumatic surgical procedures, helps to plan the course of the operation and to facilitate its implementation.

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