[Pulmonary atelectasis in patients with neurological or muscular disease; gravity-related lung compression by the heart and intra-abdominal organs on persistent supine position]

[Article in Japanese]

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We report 10 cases of pulmonary atelectasis diagnosed by chest computed tomography in patients with neurological or muscular disease. Atelectasis was frequently seen in hypotonic patients who could not roll over on their own. The atelectases located mostly in the dorsal bronchopulmonary segments, adjacent to the heart or diaphragm. Atelectasis diminished in two patients after they became able to roll themselves over. Gravity-related lung compression by the heart and intra-abdominal organs on persistent supine position can cause pulmonary atelectasis in patients with neurological or muscular disease who can not roll over by their own power. To confirm that the prone position reduces compression of the lungs, chest computed tomography was performed in both the supine and the prone position in three patients. Sagittal images with three-dimensional computed tomographic reconstruction revealed significant sternad displacements of the heart and caudal displacements of the dorsal portion of the diaphragm on prone position compared with supine position. The prone position, motor exercises for rolling over, and biphasic cuirass ventilation are effective in reducing gravity-related lung compression. Some patients with intellectual disabilities were also able to cooperate in chest physiotherapy. Chest physiotherapy is useful in preventing atelectasis in patients with neurological or muscular disease.

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