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Objective
Aim of the report is to show rare case of Osler-Weber-Rendu syndrome with pulmonary AVF, distal cerebral abscess and hypoxemia, treated by endovascular embolization.

Pulmonary AVF is uncommon vascular pathology of the lungs. Approximately 80% of cases are congenital and 70% are associated with hereditary haemorrhagic telangiectasia (HHT), also known as Osler-Weber-Rendu syndrome. Up to 20% of patients with HHT have brain AVM, ~33% - liver AVM. These lesions may present with sequelae of paradoxical thromboembolism, such as stroke or brain abscess, transient ischemic attacks and peripheral arterial emboli. Also initial presentation may be caused by right to left shunting, causing hypoxemia, dyspnoea, chest pain. The frequency of fatal complications is significant in pulmonary AVF, including rupture, haemorrhage and endocarditis. Treatment options are trans-catheter embolization, using different embolization materials, or surgery. Long-term follow-up is required due to high risk of AVF recanalization, up to 20%.

Methods
Retrospective analysis of clinical case was performed. 32-years old female patient was admitted to Riga East University Hospital “Gailezers” Emergency Department with complaints of headache, nausea and progressive neurological symptoms. On admission blood tests showed high levels of inflammation markers. More than 10 years ago patient had clipping of multiple cerebral aneurysms. Head radiological examinations (CT and MRI) showed brain abscess in the right basal ganglia region, connecting with ventricular system, accompanying ventriculitis and meningitis, as well as signs of hydrocephaly. Cerebral AVM in the right temporal lobe and right cerebellar lobe was identified. On chest X-ray inhomogeneous consolidation in the middle zone of the left lung was detected which required additional examination. Chest CTA showed large pulmonary AVF in the left lower lobe. Patient additionally had hypoxasaturation with oxygen level ~80%. Regarding possible abscesses formation as a complication from pulmonary AVF with oxygen hypoxasaturation a decision was made to occlude the AVF. Because of the neurological decompensation, increase of hydrocephaly and cerebral oedema, prior to embolization, patient twice went for ventriculostomy procedure with a ventriculo-peritoneal shunting.

Results
Catheterization of the v.cava inferior through the right femoral vein was made with pulmonary angiography of left pulmonary artery, which showed AVF of the 8th segment artery. Super selective catheterization of the AVF’s feeding arteries was performed with subsequent veno-arterial embolization using vascular microcoils. Embolization was performed in retrograde manner from AVF’s venous to arterial entity, embolizing feeding arteries at the end with purpose to reduce the risk of recanalization. Control phlebography showed full occlusion of the AVF. Right after the procedure blood oxygen saturation normalized (100%). Control chest CT after 24 days showed post-embolization metal coils in the left lower lobe without any signs of recanalization. Additional abdominal CT was made, which showed no signs of intraabdominal vascular malformations.

Conclusions
Endovascular embolization of pulmonary AVF, using vascular microcoils, appears to be safe and effective treatment method. Mechanically detachable coils allow better control of positioning or choosing the appropriate size. Veno-arterial embolization technique should be used to reduce the risk of recanalization. Patients with brain abscess of unknown origin and hypoxemia should be checked for the pulmonary AVF.

Key words
Osler-Weber-Rendu syndrome
Arterio-venous malformation
Endovascular embolization