A 44-year-old woman was admitted to the Intensive Care Unit with sudden onset dyspnoea, tachycardia, and hypotension. She had undergone a subtotal colectomy with ileorectal anastomosis for severe chronic constipation three days earlier. On admission, arterial blood gas analysis showed: pH 7.39, PaCO₂ 38 mmHg (5.0 kPa), PaO₂ 40 mmHg (5.3 kPa), bicarbonate 22.8 mmol/l, SaO₂ 74% (2L supplemental O₂/min via nasal cannula). EKG showed sinus tachycardia with negative T-waves in V1-V3. Chest X-ray revealed unilateral oligaemia, and a hyper-translucent right lung with vessels smaller than those in the left lung. The right hemi-diaphragm was elevated and there was atelectasis in the right lower lobe. Pleural effusion was seen throughout the left hemithorax (Figure 1). Based on the clinical findings and findings on the chest X-ray, a massive pulmonary embolism was suspected, and anticoagulant therapy with intravenous heparin was initiated. Trans-oesophageal echocardiography confirmed the presence of large emboli in the right pulmonary artery and in the pulmonary trunk. The right ventricle and the right atrium were strongly dilated, whereas the left ventricle was of normal dimensions. Since no clinical improvement was seen after heparinization, intravenous alteplase was administered for thrombolysis. Approximately 6 hours after thrombolysis follow-up echocardiography showed resolution of the thrombi. In general, a chest X-ray performed in the setting of a suspected pulmonary embolism is more likely to provide information helpful to exclude other causes than to confirm the diagnosis of pulmonary embolism because the positive predictive value of unilateral oligaemia is only 38% and the negative predictive value 76% on the chest X-ray (1,2,3). However, in this case the combination of clinical symptoms and the presence of Westermark’s sign, was an exception to this rule.

Figure 1. Chest radiograph showing Westermark’s sign: a hyper-translucent right lung and unilateral oligaemia. Westermark’s sign

References