

A man who collapsed after using the internet

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Lesson

Recognising prolonged seated immobility as a provoking factor in the development of venous thromboembolism can influence management including duration of anticoagulation therapy.

Keywords

e-Thrombosis, seated immobility, deep vein thrombosis, pulmonary embolism, thromboembolism, online gaming, internet use

Case report

A 42-year-old man presented to our hospital with a 48-h history of recurrent light-headedness, progressive epigastric pain, breathlessness and two syncopal episodes. He called an ambulance after his second syncopal episode in which he hit his head. His medical history included Klinefelter Syndrome, hyperprolactinaemia, recurrent hiatus hernia with surgical repair, obesity, hyperuricaemia, hyperlipidaemia, and type II diabetes.

Initial vital signs included a heart rate of 121/min, blood pressure 119/78 mmHg, respiratory rate 30/min and oxygen saturation 78% on room air. He was obese (body mass index 38 kg/m²). Forehead abrasions were evident. An electrocardiogram showed sinus tachycardia, right axis deviation, a Q wave in lead III, and T wave inversion in V1 and V2. Chest X-ray was normal. High-sensitivity troponin T was 261 ng/L. He required oxygen at a flow rate of 10 L/min via a non-rebreather mask to maintain oxygen saturations above 90%, and his blood pressure dropped to 90/66 mmHg. An emergency cardiac ultrasound showed right ventricular strain. An urgent computed tomography (CT) pulmonary angiogram showed a saddle embolism, bilateral proximal pulmonary emboli and right heart strain (Figure 1).

A diagnosis of massive pulmonary embolism with associated right ventricular strain was made. Notwithstanding the risks associated with thrombolysis in a patient with head trauma, he received 100 mg r-tPA over 2 h. Oral warfarin was started

with bridging low molecular weight heparin cover. Review on the postacute ward round elicited no known risk factors for venous thromboembolism other than obesity, thus a preliminary diagnosis of idiopathic pulmonary embolism was made with a recommendation made for indefinite anticoagulation therapy.

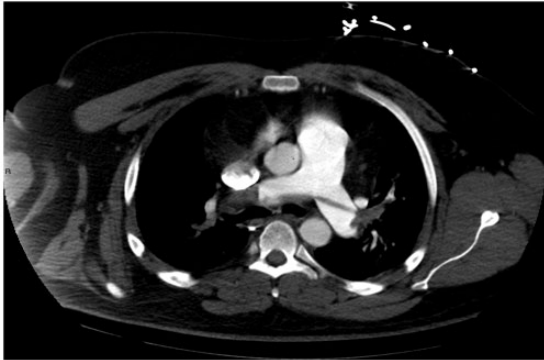
Subsequent questioning revealed that the patient was an online ‘gamer’. Immediately prior to his syncopal episodes he had been gaming online for 48 h, leaving his chair only to go to the toilet. His main source of sustenance was carbonated soft drinks. The patient described playing online games for up to nine days at a time, sleeping in his chair at the computer for short periods only. Further reading identified that he was also at increased risk of pulmonary embolism due to Klinefelter syndrome.¹

The diagnosis was changed to provoked pulmonary embolism secondary to prolonged recreational seated immobility, with the additional risk factors of obesity and Klinefelter syndrome. After discussion with the patient of the risks and benefits of lifelong anticoagulation versus shorter term treatment, it was recommended that he received six months’ anticoagulation, lose weight and modify his online gaming behaviour.

Discussion

The role of prolonged seated immobility as a risk factor for venous thromboembolism is well recognised in relation to long-distance air travel.² More recently, prolonged seated immobility in relation to sedentary occupations has been shown to be a common risk factor leading to venous thromboembolism resulting in hospital attendance.³ Both the number of hours seated at work and the time seated without getting up are associated with an increased risk. This scenario was originally termed e-thrombosis,⁴ acknowledging the crucial role of prolonged computer use in its pathogenesis. Similar behaviour has also been reported in cases of life-threatening or

Figure 1. Contrast-enhanced CT pulmonary angiogram at the level of the pulmonary trunk bifurcation demonstrates multiple low attenuation filling defects at the bifurcation and within the right and left pulmonary arteries, left interlobar and superior lingular artery in keeping with saddle embolus and multiple bilateral pulmonary emboli. The pulmonary trunk is dilated (36mm) which is concordant with concomitant pulmonary hypertension. Images not included demonstrate emboli involving all segments of both lungs and CT findings of right heart strain.



fatal pulmonary embolism following recreational computer use, in particular, computer games.⁵ While periods of up to 3–4 h at a time have been reported, our case of a nine-day period playing computer games online illustrates the extraordinarily long periods that individuals may spend sitting in such recreational pursuits.

The clinical importance of identifying the causative role of prolonged seated immobility is shown in this case, in which it led to the diagnosis of provoked rather than idiopathic pulmonary embolism. This resulted in six months rather than indefinite anticoagulation therapy, the decision not to undertake further investigation of an underlying cause, and the opportunity to provide lifestyle advice to reduce the risk of a recurrence. This case demonstrates the need

to consider seated immobility in the broader context of recreation, in addition to air travel and work, as a risk factor for venous thromboembolism.

Declarations

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Guarantor: IB

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