

Killed by Internet Addiction? A Real Possibility

Dear Editor,

The article entitled, 'Internet Addiction in Young People' published in *Annals*¹ referred to a conference paper² on cardiopulmonary-related deaths among the most severe cases of internet addiction. Fatal pulmonary thromboembolism plays a role in a number of these cases. Compared to the more widely known 'economy class syndrome' secondary to long flights, there is scarcity of published data and fewer clinicians recognise the potential risk of fatal pulmonary thromboembolism resulting from excessive computer usage.

The association between prolonged sitting and venous thromboembolism (VTE) was first reported during the London Blitz in World War 2 when cases of fatal pulmonary thromboembolism emerged among those who sat for prolonged periods in deck chairs while taking refuge in air raid shelters. In 1954, Homans published evidence of VTE associated with prolonged sitting in various situations including air travel, automobile trips and even attendance at the theatre.³

'e-Thrombosis' was the term proposed for VTE occurring from prolonged computer use in the first case report by Beasley et al in 2003,⁴ which described a 32-year-old man who suffered a life threatening pulmonary thromboembolism. His only risk factor was regularly working 12 hours per day at his computer. The same author coined the term 'seated immobility thromboembolism' (SIT) syndrome to encompass all situations of prolonged sitting that contribute a risk for VTE, such as long distance travel by air, car or train, work- and recreation- related immobility.

Another report described a 24-year-old unemployed Korean who died from pulmonary thromboembolism after continuously playing a computer game for 4 days with minimal sleep.⁵ More recently a case-control study demonstrated a 2.8-fold increased risk of VTE associated with prolonged work- and computer-related seated immobility, which was defined as sitting for at least 10 hours over 24 hours and 2 hours seated at any time without getting up.⁶

In Singapore, a 16-year-old Chinese student addicted to computer gaming (>13 hours/day in the recent period prior to his first presentation), with no predisposing factors for VTE and no prior family history of thrombotic

diseases, developed deep vein thrombosis (DVT) and massive pulmonary embolism (PE), for which he received thrombolysis and 6 months of anticoagulation treatment. A thrombophilia screen was done including antinuclear antibodies, anti-double-stranded DNA, lupus anticoagulant and cardiolipin antibodies which were negative. Protein C, protein S and anti-thrombin 3 levels were normal. Six months later, he developed a recurrent DVT and life threatening PE (Fig. 1). The patient underwent thrombolysis, but developed massive haemoptysis and cardiovascular collapse midway, necessitating resuscitation and emergency surgical pulmonary embolectomy. He subsequently had an inferior vena cava (IVC) filter insertion in addition to anticoagulation treatment. The patient was advised by the primary physician to avoid prolonged immobility, although no formal assessment or intervention by a professional counsellor or psychiatrist was made. Anticoagulation was continued for 2 years and was stopped after repeated screen for antinuclear antibodies, anti-double-stranded DNA, lupus anticoagulant and cardiolipin antibodies was negative, and the lower limb duplex and computed tomography scans showed no evidence of VTE. The IVC filter was left in situ. Unfortunately, he suffered a fatal episode of massive PE 9 months later. This illustrates how successful treatment of a medical condition but persistence of the underlying problem, gaming addiction, as a case in point, could result in a devastating outcome.

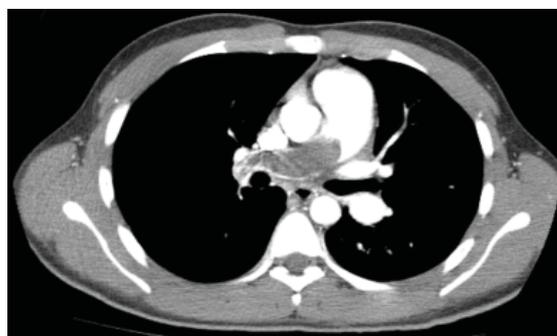


Fig. 1. CT pulmonary angiogram showing large embolus in the right main pulmonary artery.

In conclusion, although internet addiction is largely perceived as a psychosocial problem, more attention should be given to address its detrimental and fatal effect on physical health in young healthy individuals. It is expectant that younger lives including children and teenagers may not be spared as electronic gadget and computer exposure is introduced early both at home and in school. Recognising this is the first step to the development of long-term preventive measures such as education to raise public awareness of the SIT syndrome and increasing accessibility to counselling services for the high-risk population. Given the evidence, future studies may be considered to evaluate the role of lower limb duplex screening in selected cases of severe internet addiction. In subjects engaging in excessive video or computer cyberspace activity, consequently the risk of e-Thrombosis leading to e-Pulmonary embolism (e-PE) increases exponentially when addiction is established. In those with e-Thrombosis, there may be an indication to maintain indefinite anticoagulation till the addiction is completely treated with absolute certainty.

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