Introduction:

Deep vein thrombosis (DVT) is a common condition (1 in 1000) with potentially serious consequences. Post-thrombotic syndrome affects 20–40% of people after DVT, whilst DVTs are seen in 70–80% of those with pulmonary embolism (PE).1,2

Several provoking factors for DVT are described in the National Institute of Health and Care Excellence (NICE) Clinical Knowledge Summaries (CKS).3,4 They are used to determine the clinical probability of DVT, aid choice of investigation and establish whether a DVT is considered ‘provoked’ or ‘unprovoked’. The latter has implications for duration of anticoagulation and extent of investigation.

This case study highlights a case of DVT due to prolonged computer use: an unrecognised provoking factor for venous thromboembolism (VTE).

Case Report:

A 60-year-old gentleman presented with a one-week history of right calf pain. Examination revealed a swollen, indurated and tender right calf with pitting oedema to the knee. An acute thrombus in the right femoral and popliteal vein was confirmed on ultrasound. Based on the NICE CKS, no venous thromboembolism (VTE) risk factor was identified. (Figure 1)

On further enquiry, the patient described spending at least 12 hours a day at his computer for the past two months with the aim of learning a new computer language. This led us to question whether immobility due to extended computer use could be classified as a provoking factor for DVT.

A review by the haematology team, including additional investigations (physical examination, chest X-ray, blood tests and urinalysis, plus a CT abdomen-pelvis and mammogram in those >40 if the aforementioned tests are negative), found no other provoking factors. A subsequent search of the literature revealed a number of studies exploring so-called ‘E-thrombosis’, where the VTE risk is increased solely by periods of computer-related immobility.5–7

The above was communicated to the patient and he was encouraged to reduce his future DVT risk through lifestyle change. He now takes frequent breaks from his computers, and swims on a regular basis. (Figure 2)

Discussion:

Provoked DVTs are associated with a temporary risk factor (e.g. surgery, pregnancy) whilst unprovoked DVTs either have no clear risk factors or a permanent one (e.g. active cancer). This distinction has important implications for investigation and treatment: patients with unprovoked DVTs should be investigated for occult malignancy and thrombophilia; furthermore, anticoagulation duration is often prolonged/indefinite in those with unprovoked DVTs.4

The recognition of computer-related immobility, like long-distance travel, as a risk factor of DVT has two-fold importance: firstly, identification of computer-related DVTs as provoked means potentially harmful investigations and prolonged anticoagulation with it’s associated risk are avoided; secondly, appropriate lifestyle advice can be given in order to prevent recurrence. Computer-related immobility is not well recognised by clinicians, nor is it listed as a risk factor in the NICE CKS, which may lead to inappropriate management of these cases.

Conclusion:

The percentage of households with computers has risen to 85% in 2017 from 13% in 1985 whilst the average adult spends 24 hours online each week.7 Given the ubiquity of computers throughout the home and workplace, the risk of computer-related immobility is an important consideration.

‘E-thrombosis’ has become an increasingly common, yet under-recognised cause of DVT, with some clinicians continuing to deny its existence despite the aforementioned evidence. Given the implications for investigation, treatment and prevention, computer-related immobility is, and will continue to be, an important part of the clinical management of DVT.

We have made the following recommendations based on this case report:

1. Amendment of the NICE guidelines to include ‘e-thrombosis’ as a specific risk factor for DVT
2. Management of computer-immobility associated DVTs as provoked DVTs (in the absence of other recognised risk factors)
3. Patient education to include advice on computer hygiene as a primary and secondary prevention measure

References: