Upper extremity deep vein thrombosis in a TV cameraman

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Abstract

We report the case of a 40-year-old right-handed man who developed a right subclavian vein thrombosis due to work as a TV cameraman. He presented with a sudden onset of marked swelling and blue discolouration of his right arm 3 weeks after the most strenuous and prolonged episode of TV camera work that he had ever undertaken. This involved carrying a 9 kg camera on his shoulder, with his right arm flexed and abducted, for a 60 min period with provocation of severe pain and marked discomfort persisting during the subsequent 3 weeks before presentation. A clinical diagnosis of upper extremity deep vein thrombosis (UEDVT) was made, with the diagnosis confirmed by ultrasound. He was treated with catheter-induced thrombolysis and a 3 month course of anticoagulation. He was advised that his UEDVT was caused by his occupation and that he should no longer work as a cameraman. This case shows the importance of identifying any occupational cause of UEDVT.

Key words Paget-Schroetter syndrome; subclavian vein thrombosis; TV cameraman; upper extremity deep vein thrombosis.

Introduction

Upper extremity deep vein thrombosis (UEDVT), which usually refers to thrombosis of the axillary and/or subclavian veins, may be associated with significant morbidity and complications such as pulmonary embolism. While it may occur spontaneously, the three main causes are effort-induced (Paget-Schroetter syndrome), catheter-induced and thrombophilia states [1]. The recognition of the potential role of effort-induced UEDVT is important not only in identifying the underlying cause but also in implementing preventive measures to reduce the risk of recurrence. There may also be work compensation implications if there is an occupational cause. Here, we report the case of a man who developed a subclavian vein thrombosis due to work as a TV cameraman to raise awareness of occupation as a cause of this condition.

Case report

A 40-year-old right-handed TV cameraman presented to the emergency department (ED) at Wellington Hospital, New Zealand (NZ) with a sudden onset of marked swelling and blue discolouration of his right arm. This occurred 3 weeks after the most strenuous and prolonged episode of TV camera work that he had ever undertaken. He usually operated the camera on his shoulder for sessions of 3–5 min at a time, with up to six sessions on an average working day. About four times a week he could have a session of up to 20 min at a time if an interview was longer than anticipated or if interviews were repeated. Sessions >20 min were most unusual. His work included some additional camera tripod work, and carrying his gear (not on his shoulders).

The index episode which occurred 3 weeks prior to his ED presentation lasted 1 h and involved holding a 9 kg camera on his shoulder, with the weight on both his shoulder and neck, his arm abducted and flexed, his forearm flexed and the hand/thumb vertical on the hand-grip to help hold the camera up. He recalls that it was really painful while operating the camera during the session, requiring him to take the camera briefly off his shoulder for relief. The accompanying journalist attempted to obtain a replacement cameraman due to the pain the patient was experiencing, but he was advised to keep going as best he could. He reported pain across his shoulder, chest, subclavicular and neck regions at the end of the session. The discomfort continued during the
following 3 week period, with a progressive reduction in the time he could use the camera before he had to stop due to pain, and a progressive increase in his recovery time. At the end of the 3 week period, his arm suddenly became swollen.

There was no previous medical history of note and in particular no family or personal history of venous thromboembolism. There were no symptoms to suggest an associated pulmonary embolism. On examination, the right arm was swollen to the axilla, erythematous, and venous congestion was noted. A diagnosis of right UEDVT secondary to trauma from work 3 weeks prior to the presentation was made. He had an urgent ultrasound which showed an extensive thrombus in the right subclavian vein and axillary vein with proximal extension into the confluence of the subclavian vein with the internal jugular vein. He was started on subcutaneous enoxaparin and changed to intravenous heparin prior to catheter-induced thrombolysis with urokinase (Figure 1A). A post-procedure venogram showed that the axillary and subclavian veins were patent with good flow (Figure 1B). He was started on warfarin with bridging enoxaparin cover. A follow-up ultrasound at 6 weeks showed diminished flow through the axillary vein and recanalized thrombus in the subclavian vein. The warfarin therapy was stopped after 3 months. Due to persisting discomfort of his right shoulder, slight erythema of his hand, and the evidence of incomplete resolution of the DVT on ultrasound, he was transferred to low-dose aspirin and referred for a right first rib resection. A subsequent thrombophilia screen was normal.

He was advised that his UEDVT was caused by his occupation, that he should no longer work as a cameraman and that he should submit a claim to the Accident Compensation Corporation (ACC), a NZ government organization which provides compensation for work-related injuries. He was dismissed from employment and is currently retraining. ACC compensation was approved.

Discussion

Approximately 10% of DVTs affect the upper extremity, of which one fifth are primary [2]. Amongst patients presenting with primary UEDVT, about two thirds report strenuous activity involving force or abduction of the dominant arm before the development of the thrombosis, known as effort-related or Paget-Schroetter syndrome [2,3]. To our knowledge, this is the first published case of an effort-induced UEDVT in a TV cameraman. The description of the index event causing his subclavian and axillary vein thrombosis is consistent with ‘effort thrombosis due to repeated compression damage of the vein by prolonged and heavy work in the arm, often in an elevated position’ [4] and ‘stress thrombosis, which is most frequent in healthy young men and typically follows unusual arm exertion’ [5]. UEDVT has been described secondary to a broad range of work and sporting activities, such as painting, carrying food trays, lifting bales of hay, playing the cello, rifle-carrying, removing storm windows, taxi-driving (with arm out of the window), climbing rope ladders, pitching a baseball, swimming, press-ups, weight-lifting, rowing and tennis [1–10].

The UEDVT is likely to have initially occurred at the time of the index work event, with the thrombosis initially non-occlusive, with extension and progression to a fully occlusive right subclavian vein thrombosis 3 weeks later. In addition to external compression of the subclavian vein, both acutely and secondary to fibrosis from repeated trauma, and damage to the vascular endothelium, the Valsalva dynamics increase venous pressure and
reduce blood flow, which may constitute a stasis factor at the time of compression [1,4–7].

To reduce the risk of recurrence first rib resection relieves compression of the neurovascular bundle at the thoracic outlet [1]. His UEDVT was accepted as a work-related injury, with ACC compensation allowing him to retrain.

Key points
• Approximately 10% of deep vein thromboses affect the upper extremity and 20% of these are primary thromboses.
• About two thirds of patients with primary upper extremity deep vein thromboses report strenuous activity involving force and/or abduction of the dominant arm prior to developing the thrombosis and an occupational cause should be considered in such cases.
• This case shows the importance of identifying any occupational cause, both to ensure that patients benefit from appropriate work injury compensation and to inform decisions about future occupation.

Conflicts of interest
None declared.

References