

Deep Venous Thrombosis Post Conservative Treatment of Upper Limb Humerus Fracture

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Abstract

Background: Upper limb deep venous thrombosis (DVT) is considered a rare condition. Unfortunately, still the factors which contribute to this conditions are unknown following trauma or elective orthopedic surgery. The incidence of pulmonary embolism (PE) related to upper extremity thrombosis is reported as 12 to 36%, where up to 16% of cases are fatal.

Case Presentation: Upper extremity deep vein thrombosis (UEDVT) is rare especially following a trauma. Thus, a few of cases had been reported as a case report. We report this case of a 39-year-old active male with UEDVT after trauma with humerus fracture, which was treated conservatively. The U shape slap which was obtain had caused thrombosis of the axillary vein, which had led to swelling over his upper limb. Clinical assessment of DVT including Doppler was positive. Therefore, Treatment by low molecular weight heparin (LMWH) then by vitamin K antagonists was conducted. Additionally, occupational management activity was prescribed.

Conclusion: UEDVT is a rare complication in upper extremity fractures, however it should be anticipated, especially in young patients with clavicular or humeral fractures, as it could lead to fatal complications. We still need large studies to evaluate the cost effectiveness of routinely VTE chemoprophylaxis in patients with UEDVT.

Keywords: DVT; Humerus fracture; Trauma; Upper Limb

Introduction

Upper extremity deep venous thrombosis [UEDVT] is a rare complication in patients with fractures [1] currently the guidelines recommend Venous thromboembolism [VTE] prophylaxis in limited situations in orthopedic practice, situation such as arthroplasty, hip fracture surgery [2], however; the routine use of VTE in fractures settings is still controversial.

There is limited cases of documented UEDVT, especially in patients with upper extremity fractures, we report a case of EUDVT possibly provoked by u shape slap placement for a midshaft humoral fracture.

Case Presentation

39 years old male, medically free, presented to the ED with history of road traffic accident (RTA) complaining of right arm pain and deformity, two hours prior to presentation. he was vitally stable, his right arm was mildly swelled and tender, his range of motion was limited, and neurovascular examination was intact.

Radiological X-ray shows midshaft humerus fracture (Figure 1), other radiological investigations and blood work were unremarkable. The plan of this patient was to apply U-shaped back slap as conservative treatment. Post casting radiological X-ray was taken showing accepted alignment of the fracture. Patient was instructed to come to the trauma clinic for follow up within a week.

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Figure 1: AP Plain X-ray showing midshaft humerus fracture.

On the next day; the patient presented again to ED complaining of severe pain over the right upper extremity, more severe in the forearm, Associated with severe swelling, no incidence of trauma. On examination; he was vitally stable, the U- shaped back slap was removed, there was severe swelling over the forearm extending to the arm, with restricted range of motion.

Radiological X-ray showed the same accepted position and alignment of the midshaft humerus fracture with possible axillary compression by the U-shaped slap (Figure 2). Doppler ultrasonography of right upper limb shows deep venous thrombosis (DVT) over the right upper arm in the brachial vein (Figure 3).



Figure 2: AP Plain X-ray showing the compressing of the U-Shape slap over the axially area.

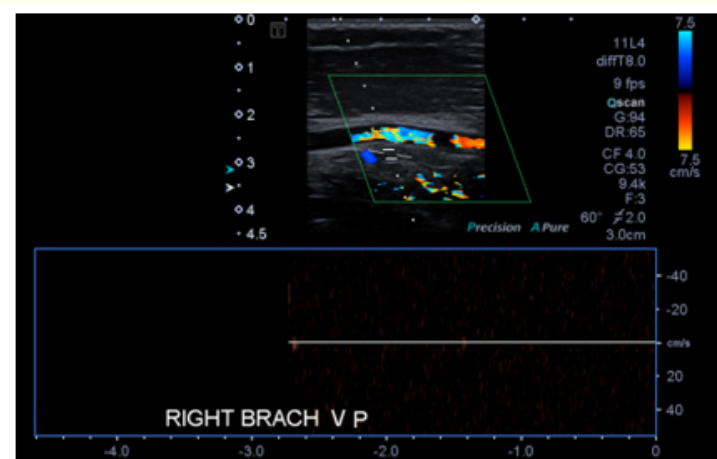


Figure 3: Venous doppler US showed DVT over the upper limb, localized in the Brachial vein.

The patient was referred to the medical team immediately, consequently; they admitted the patient as a case of deep venous thrombosis and started him on anticoagulation by Enoxaparin therapeutic dose 40 mg subcutaneous twice daily. Patient was kept in the hospital under their care for 3 days, then was discharged in stable condition with follow up.

On the subsequent check-up after 2 weeks; the swelling started to subside, he was still on anticoagulation by Enoxaparin 40 mg subcutaneous, which was shifted to warfarin 5 mg orally once daily by the medical team. Regarding our fracture; the U-shape back slap changed to functional brace, and X-ray imaging was ordered to evaluate the fracture alignment (Figure 4).

On follow up after 6 weeks; the patient improved. currently; He takes anticoagulant warfarin 2 mg orally adjusted dose.



Figure 4: AP Plain X-ray showing functional brace with well alignment of humerus fracture.

Discussion

The studies discussing UEDVT are limited. UEDVT causes are categorized into primary or secondary, the former include Idiopathic UEDVT and thoracic outlet syndrome, while the secondary include central venous catheter [CVC], cancer, hypercoagulable states. Among all patients with VTE; the incidence of UEDVT is a rare; reaching merely 3 - 6% among all DVTs [3-6], numerous studies have shown that patients who are likely to UEDVT develop are young men, with concurrent cancer, and inserting a CVC [3,6]. The most frequent sites of developing UEDVT was the subclavian vein [4].

VTE is a rare complication in fractures in general; as the incidence of VTE among all upper limb fracture was approximately 1.3%, while the specific incidence of UEDVT is merely 0.35%, less than that of pulmonary embolism [PE] and lower extremity deep venous thrombosis [LEDVT] [7]. Another study found the incidence of VTE among 1701 hospitalized patients was 1.4%, while it's incidence among UEDVT was 1.25%, which is also quite rare [1].

A population-based study conducted in the US confirmed that proximal humeral fractures were one of the commonest types of fractures behind Distal radial, ulnar, hand, and femur fractures with its incidence increasing with advancing age [8,9].

Our patient family history was unremarkable for any risk factor for developing VTE, which is contrasting from the case reported by S Jackson where a 19 year old man developed UEDVT following a clavicular fracture, the patient had significant family history of VTE disease across 2 generations [10] and few other cases demonstrated that ant patient is at risk of developing VTE regardless of family history [11-13]. It The current guidelines have recommend VTE prophylaxis for patients undergoing elective arthroplasty, hip fracture surgery or high-risk patients undergoing knee arthroscopy [2], so no current guidelines have recommended VTE prophylaxis in fractures, which was argued in study conducted in the US, which recommended considering VTE prophylaxis in patients with UEDVT [1].

Conclusion

UEDVT is a rare complication in upper extremity fractures, however it should be anticipated, especially in young patients with clavicular or humeral fractures, as it could lead to fatal complications. We still need large studies to evaluate the cost effectiveness of routinely VTE chemoprophylaxis in patients with UEDVT.

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