

# Spontaneous Subdural Hematoma Secondary to Warfarin Toxicity in a Case with Deep Vein Thrombosis and Pulmonary Embolism

Y Roka, G Paudel, B K.C, S Munakomi

## Citation

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## Abstract

Warfarin is one of the common drugs used in the treatment of deep vein thrombosis, pulmonary embolism and atrial fibrillation with stroke. Warfarin-associated intracerebral hemorrhage (ICH) has become common in the last decades contributing to 19% of intracerebral bleeds. We report a case with deep vein thrombosis that developed acute onset neurosurgical deterioration secondary to left subdural hematoma. Burr hole evacuation was done with correction of the coagulopathy.

## INTRODUCTION

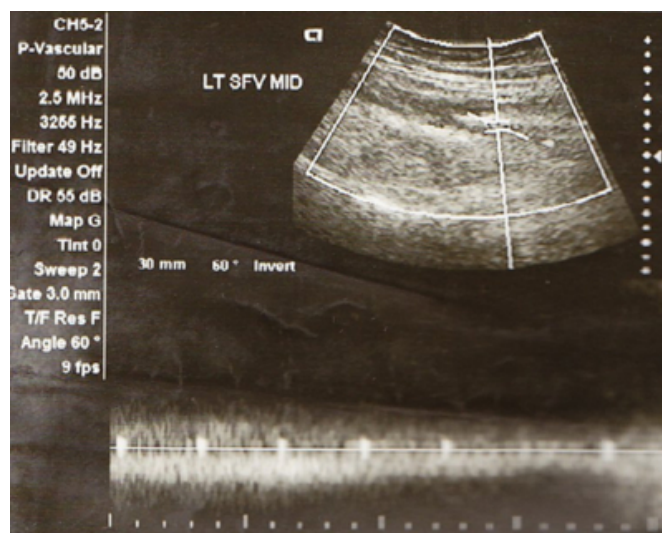
Warfarin is one of the common drugs used in the treatment of deep vein thrombosis, pulmonary embolism, mechanical heart valves and chronic atrial fibrillation with stroke. The incidence of intracerebral hematoma (ICH) secondary to warfarin use has been increasing over the last decade.<sup>1</sup>

## CASE REPORT

A 28-year old female presented to the emergency with history of loss of consciousness (LOC) for one day. There was no history of trauma, fever, headache, seizure or vomiting preceding the LOC. Her pupils were unequal with the left dilated and nonreacting to light. The Glasgow Coma Score (GCS) was 9. One month back she had presented with left leg swelling and the Venous Doppler study had shown left sided deep vein thrombosis involving the common iliac, common femoral and superficial veins with cellulitis (Figure-1).

## Figure 1

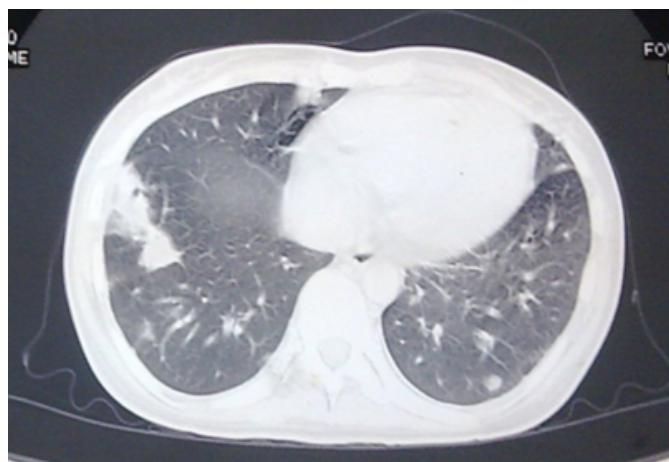
Fig.1. Venous Doppler showing absent flow in the common iliac, femoral and superficial veins of the left leg



Computed tomogram (CT) of the thorax had also shown pulmonary embolism during the initial presentation (Figure-2). There were no features of coagulopathy, intrabdominal abnormality and drug intake during initial workup. She was started on warfarin 6 mg once daily dose and discharged with follow-up at two weekly intervals with International Normalised Rate (INR) reports.

**Figure 2**

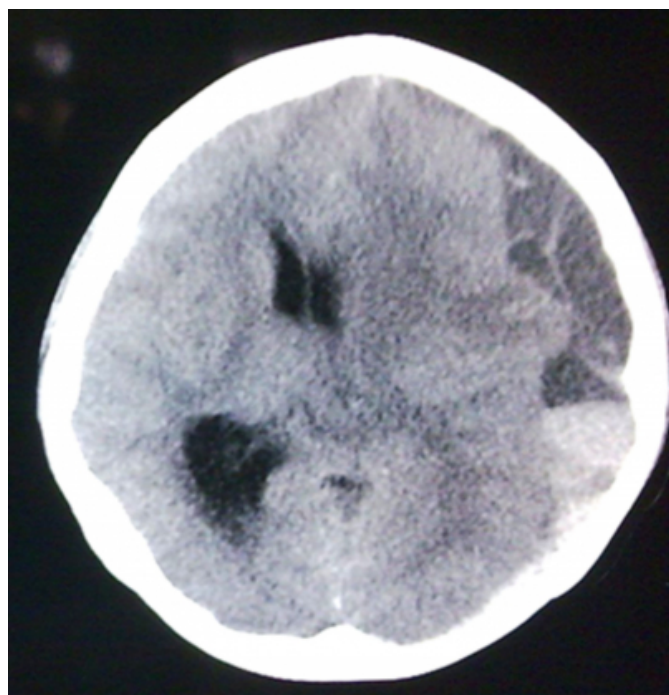
Fig.2. CT thorax showing a wedge shaped peripheral lung opacity suggestive of pulmonary embolism.



Urgent CT head was done which showed a large acute on chronic subdural hematoma on the left side with gross midline shift (Figure-3).

**Figure 3**

Fig.3. CT heads showing a large left subdural hematoma with gross midline shift and compression of ipsilateral ventricle.



The Prothrombin time (PT) was 40 with INR of 4. Rest of the blood picture including platelets was normal. In view of the gross midline shift and poor GCS immediate surgery was planned under fresh blood, vitamin K and fresh frozen plasma (FFP) coverage with high risk consent. Single burr

hole evacuation of the subdural hematoma with closed drainage was performed. Intraoperatively the blood was under significant pressure and there was no active bleeding present at the end of surgery. Care was taken not to breach the inner membrane of brain cortex. Postoperatively the GCS improved to 12 on the first postoperative day. FFP and vitamin K continued after operation with correction of the PT on the seventh day. She is in follow up with the internal medicine for further management of her DVT and to restart anticoagulants.

## DISCUSSION

Warfarin is one of the common drugs used in the treatment of deep vein thrombosis, pulmonary embolism, mechanical heart valves and chronic atrial fibrillation with stroke. It acts by inhibiting the hepatic synthesis of coagulation factors II, VII, IX, X and the anticoagulant proteins C and S which are vitamin K-dependent. The most common adverse effect of warfarin is bleeding in any location, which may be fatal or nonfatal followed by skin necrosis. Warfarin-associated intracerebral hemorrhage (ICH) has become common in the last decades contributing to 19% of intracerebral bleeds.<sup>1</sup> The hematomas in this group are also larger than other causes of spontaneous ICH.<sup>2</sup> ICH secondary to warfarin present as a neurosurgical emergency with a 30 day mortality of 50% if untreated.<sup>3</sup>

Reversible of coagulopathy is the first aim, although the specific drug has yet to be defined.<sup>3</sup> INR has been universally used to monitor the extent of warfarinisation. Many studies have shown that the previous INR or the INR at presentation has no correlation in predicting the incidence of intracerebral bleed.<sup>4,5</sup> In a study by Jeffree et al they found that ICH was more common in the warfarin group and concluded that despite INR monitoring warfarin use was associated with an increased risk of ICH.<sup>4</sup>

Surgical management of this hematoma depends on their size, location, mass effect and GCS of the patient on presentation. Low GCS and large hematoma have poor prognosis.<sup>5</sup> All those with favorable GCS, no mass effect and small hematoma can be initially tried with conservative management.<sup>6</sup> Burr hole evacuation under FFP cover is the common neurosurgical procedure performed. In the elderly care needs to be taken to avoid concomitant use of other drugs like aspirin and antiplatelet agents that can increase the chances of coagulopathy.<sup>7</sup>

Thus all patients on warfarin must be clinically observed for

any neurological deterioration to rule out ICH. Repeat INR although not predicting ICH incidence helps to check the level of warfarinisation. Urgent CT with reversible of coagulation with or without surgery can help save life and prevent further morbidity.

## References

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**Author Information**

**Y.B. Roka, M.S, M.Ch (Neurosurgery), FNNI (Skull Base Surgery), Additional Professor**

Department of Surgery, Neurosurgical Unit, B. P. Koirala Institute of Health Sciences

**G. Paudel, M.S, Senior Resident Surgery**

Department of Surgery, Neurosurgical Unit, B. P. Koirala Institute of Health Sciences

**Bidur K.C, MBBS, Surgery Resident**

Department of Surgery, Neurosurgical Unit, B. P. Koirala Institute of Health Sciences

**S. Munakomi, MBBS, Surgery Resident**

Department of Surgery, Neurosurgical Unit, B. P. Koirala Institute of Health Sciences