

## Management of over-anticoagulation

Over-anticoagulation increases the risk of haemorrhage. The first step in managing this problem is to identify the cause. Common causes include starting or stopping an interacting medication, deteriorating liver function, and patient error (such as taking the wrong dose or confusing different strength tablets). Many of these causes are preventable.

The approach to a raised INR should be individualised, paying attention to the indication for the warfarin, the patient's risk of bleeding and whether it is safe to continue therapy at all. Some patients need to be admitted to hospital, while others just need to miss a dose of warfarin.

Guidelines for managing over-anticoagulation (Table 5) are based on the recently published recommendations from the Australasian Society of Thrombosis and Haemostasis.<sup>10</sup> The half-life of vitamin K is shorter than that of warfarin, so the INR may rebound 24–48 hours after giving vitamin K. The intravenous preparation of vitamin K can be administered orally or subcutaneously with equal efficacy, and these routes are usually safer and more convenient in patients who are not actively bleeding.

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### REFERENCES

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## Self-test questions

The following statements are either true or false (answers on page 103)

3. The risk of warfarin causing bleeding is the same in all age groups.
4. The INR of a patient taking warfarin may be altered by a change in diet.

## Medicinal mishap

### Hidden haemorrhage with warfarin

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#### Case

A 78-year-old man presented to hospital because his right leg felt clumsy and weak. On assessment he had slightly reduced muscle power and appeared to have suffered a right hemiparesis. Over the next four hours, his right side became weaker, although he was still able to flex and extend his right hip against gravity. His ECG showed that he was in sinus rhythm with a heart rate of 70 beats/minute. He was started on warfarin therapy as we presumed that he had a 'stroke in evolution'.

After 10 days of warfarin therapy, the man noticed that his weak right leg was 'twitching' and he felt generally unwell. He complained of cramps in his right leg which made the whole leg 'jump off the bed', involuntarily. A few hours later, he became hypotensive but remained conscious. Clinical examination revealed that he had developed painful

spontaneous contractions of his right hip flexors (positive psoas sign). The INR at this time was 2.7.

A CT scan of the abdomen showed a large haemorrhage in the retroperitoneal space and surrounding the right psoas muscle. Anticoagulation was stopped, and clotting factors and vitamin K used to reverse the anticoagulant status. The man's symptoms gradually settled and with a short intensive rehabilitation program, he made a good functional recovery.

#### Comment

Occult bleeding due to warfarin therapy can present in many ways and requires a high index of clinical suspicion for prompt diagnosis. It can also occur when the INR is in the therapeutic range, especially in older people, although the risk of bleeding is clearly higher when the INR exceeds the specified upper limit. Haemorrhage into the retroperitoneal space does not cause classic abdominal signs such as peritonism. A positive psoas sign is caused by conditions which irritate the psoas muscle. Tenderness may also be elicited by stretching the psoas muscle by hip extension. Apart from haematoma, other causes of a positive psoas sign include appendicitis and retroperitoneal abscess.