CASE REPORT

Intracerebral haemorrhage, anticoagulation and mechanical heart valves: what should I do next?

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raj.shah@doctors.org.uk**SUMMARY**

Life-long oral anticoagulant therapy is recommended to all patients with mechanical heart valves to reduce the incidence of thromboembolic events. However, intracerebral haemorrhage is the fatal complication associated with anticoagulation, with an estimated 6-month mortality of 67%. (1) The incidence of cerebral bleeding while on anticoagulation is 0.3–0.7%/year, with as many as 85% of survivors left with permanent neurological deficits. (2) Difficulties in management arise when anticoagulation is temporarily discontinued as mechanical valves, particularly mitral, are exposed to significant thromboembolic and valve dysfunction risk. The decision on when to appropriately restart anticoagulation needs to be balanced with the risk of precipitating further cerebral haemorrhage. There are currently no guidelines on the optimal time to start anticoagulation. We describe a case of the management approach implemented in a patient with a mechanical valve presenting to the emergency department with an acute intracerebral haemorrhage.

BACKGROUND

Life-long oral anticoagulant therapy is recommended to all patients with mechanical heart valves to reduce the incidence of thromboembolic events. However, intracerebral haemorrhage is the fatal complication associated with anticoagulation, with an estimated 6-month mortality of 67%.¹ The incidence of cerebral bleeding while on anticoagulation is 0.3–0.7%/year, with as many as 85% of survivors left with permanent neurological deficits.²

Difficulties in management arise when anticoagulation is temporarily discontinued as mechanical valves, particularly mitral, are exposed to significant thromboembolic and valve dysfunction risk. The decision on when to appropriately restart anticoagulation needs to be balanced with the risk of precipitating further cerebral haemorrhage. There are currently no guidelines on the optimal time to start anticoagulation.

We describe a case of the management approach implemented in a patient with a mechanical valve presenting to the emergency department with an acute intracerebral haemorrhage.

CASE PRESENTATION

A 74-year-old man, with a background of ischaemic heart disease, hypertension and mechanical valve replacement following significant mitral prolapse, presented to the emergency department with a subacute history of generalised headache, confusion and vomiting. He had been self-administering non-

steroidal anti-inflammatory analgesics without any symptomatic relief. There was no history of recent trauma. His regular medication included warfarin 4 mg once daily. He was otherwise fully independent.

On examination, the patient was alert but disorientated, with a Glasgow Coma Scale of 14/15 (E4 V4 M6). Cardiovascular and chest examinations were unremarkable. Central and peripheral neurological examinations were unremarkable, with pupils symmetrically equal in size and reactive to light, with normal power and bilateral flexor plantar responses.

INVESTIGATIONS

Laboratory investigations revealed normal full blood count and biochemistry; however, the international normalised ratio (INR) was 5.5.

An urgent CT of the head (figure 1) was organised which revealed a large right-sided hemispherical intraparenchymal haemorrhage involving the temporal, parietal and occipital regions with surrounding cerebral oedema. In addition, there was also evidence of a small right-sided subdural haemorrhage and infratentorial haemorrhage.

TREATMENT

Based upon these findings, the patient was transferred to our local neurosurgical centre for an urgent decompressive craniotomy. Preoperatively, the case was discussed with a consultant haematologist who advised to stop warfarin and to initially reverse coagulopathy with intravenous prothrombin complex concentrate (50 units/kg) and vitamin K. Transthoracic echocardiogram performed at this stage demonstrated a normally functioning mechanical mitral valve prosthesis with tilting disc. The patient was subsequently started on therapeutic low-molecular weight heparin (1.5 mg/kg divided over two-doses/24 h), which was continued throughout the perioperative period (13 days in total).

Six days following presentation and with no further neurological deterioration, the patient underwent successful craniotomy with evacuation of the right subdural haematoma and removal of the right parietal bone flap (figure 2). Five days postoperatively, the patient was started on warfarin, in addition to the therapeutic low-molecular weight heparin started preoperatively, until the INR returned to therapeutic range as per consultant haematologist and cardiologist guidance.

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Figure 1 CT head demonstrating an acute right hemispherical intraparenchymal haemorrhage and a small right subdural haemorrhage and infratentorial haemorrhage.

OUTCOME AND FOLLOW-UP

Following discharge, our patient has been well and remains under close surveillance. Serial interval CT scans have revealed no recurrence or development of new acute intracerebral haemorrhages over a 12-week period.

Figure 2 Postoperative interval CT head demonstrating no new acute intracranial haemorrhage.

DISCUSSION

At present, there is no consensus on precisely when to reintroduce oral anticoagulation therapy postintracerebral haemorrhage. In 2009, Romualdi *et al*³ published a systematic review of the literature and demonstrated that restarting oral anticoagulant therapy a few days after and, indirectly, stopping anticoagulant therapy for few days (even for 7–14 days) after the occurrence of cerebral haemorrhage are both safe. Unfortunately, the current published evidence is poor: only low-quality observational cohort studies and case reports were available.

The management of intracerebral haemorrhage in patients on oral anticoagulants with mechanical heart valves continues to pose great management difficulties, and as a result remains a significant treatment dilemma to the emergency physician.

Given the paucity of guidelines, management in such situations is usually tailored to individual case-based scenarios. We recommend the early involvement of multispecialist input (specifically cardiology, haematology and neurosurgery) for similar cases to formulate efficient and appropriate management decisions, which will ultimately contribute towards successful patient outcome.

Learning points

- ▶ Intracerebral haemorrhage is the fatal complication associated with anticoagulation, with an estimated 6-month mortality of 67%.
- ▶ Intracerebral haemorrhage should be considered as a differential diagnosis, in patients on warfarin presenting with acute confusion.
- ▶ Management of an acute intracerebral haemorrhage in patients on oral anticoagulation necessitates a multidisciplinary approach, with prompt referral to neurosurgical specialist centres.
- ▶ At present, there are no established guidelines regarding the optimal time to restart anticoagulation.

Competing interests None.

Patient consent Obtained.

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