Case reports

LIMB LOSS FOLLOWING THE USE OF HEPARIN

A lesson to be remembered

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The optimal method of prophylaxis against venous thromboembolism after total hip replacement (THR) remains uncertain. Most surgeons use some form of pharmacological prophylaxis, most commonly heparin. The precise balance of the benefits and risks is unclear, and serious complications can occur. We describe a case of heparin-induced thrombocytopenia and thrombosis syndrome in a 62-year-old woman after THR.

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The development of the heparin-induced thrombocytopenia and thrombosis syndrome in a 62-year-old woman after elective total hip replacement ultimately resulted in a hind-quarter amputation. The arguments for and against the use of pharmacological prophylaxis are presented.

Case report

A previously healthy 62-year-old woman had an elective THR for advanced osteoarthritis. She was morbidly obese with a body mass index of 33; otherwise she had no other risk factors for thrombophilia. Thromboprophylaxis began on the day before surgery with unfractionated heparin at a dose of 5000 U twice daily and the wearing of thromboembolic stockings. On the sixth postoperative day, she was independently mobile. The administration of heparin was discontinued and she was discharged.

Two weeks later, she complained of pain in the groin and swelling of the limb. Duplex ultrasound confirmed thrombosis of the iliofemoral vein. Treatment with enoxaparin was started as an outpatient. A full blood count showed a reduction in the platelet count from $262 \times 10^9/l$ at the time of operation to $125 \times 10^9/l$.

She was readmitted six days later with an acutely ischaemic leg. An arteriogram showed multiple occlusions in the common femoral and popliteal arteries. She was given intravenous heparin. The platelet count subsequently fell further to $32 \times 10^9/l$ and a preliminary diagnosis of heparin-induced thrombocytopenia and thrombosis syndrome (HITS) was made which was later con-

firmed by the detection of pathogenic HIT antibodies. Heparin was stopped immediately and replaced with danaparoid sodium. An embolectomy with on-table thrombolysis was carried out, but failed because of subsequent thrombosis. On the following day, an inferior vena cava filter was inserted and a hind-quarter amputation undertaken. Postoperatively, warfarin was given.

Five days later, the platelet count began to recover. She made a good recovery, but developed a methicillin-resistant *Staphylococcus aureus* wound infection which required further surgical debridement, VAC pump dressings and prolonged antibiotics.

Discussion

This case illustrates several important points. All patients receiving treatment with heparin should be monitored carefully for thrombocytopenia, the development of which may be influenced by prior exposure to heparin. Our patient was previously sensitised by the unfractionated heparin and thus rapidly developed heparin-induced thrombocytopenia (HIT) when enoxaparin was commenced. The American College of Chest Physicians Consensus Conference on Antithrombotic Therapy recommends the monitoring of the platelet count either daily or every second day during the high-risk period for HIT, which is between five and ten days after starting heparin.¹

Furthermore, HIT should be suspected in a patient receiving heparin who develops an unexpected thrombocytopenia with or without thrombosis. In our case, we failed to recognise the HIT syndrome on two occasions, namely when she presented with proximal vein thrombosis and subsequently with the ischaemic leg despite a dramatic fall in the platelet count.

If HITS is suspected, the use of heparin should immediately be stopped and alternative forms of anticoagulation such as hirudin, lepirudin or danaparoid sodium, considered. We used danaparoid sodium which is a mixture of anticoagulant glycosaminoglycans with predominant anti-factor Xa activity.

This case also raises several contentious issues regarding the thromboprophylaxis of patients undergoing elective hip surgery. Earlier advice recommending the routine use of heparin was based on the assumption that 2.3% to 3.4% of patients will suffer a fatal pulmonary embolism if not given pharmacological prophylaxis.² Recent studies, however, have shown that the incidence of fatal pulmonary embolism is only 0.1% to 0.34%^{3,4} and that there is no conclusive evidence to suggest that a reduction in the frequency of venographically-detected deep-vein thrombosis would lead to a subsequent reduction in the death rate from pulmonary embolism.⁵ In order to demonstrate this, a sample size of around 100 000 would be required since the incidence of fatal pulmonary embolism is so small.⁶

Some of those who advocate the routine use of heparin also propose that the duration of prophylaxis should be extended to 35

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days after surgery because the risk of late-onset deep-vein thrombosis remains high even after discharge from hospital.^{7,8} In one study⁸ this was seen to be at the expense of an increased risk of haemorrhage of 5.1% in the treatment group and 0.9% in the control group.⁸ This is usually minor, but may result in the formation of haematoma and wound infection.

The National Total Hip Replacement Outcome Study found that pharmacological prophylaxis was used in 88% of patients having elective hip surgery with low-molecular-weight heparin alone in 50%, unfractionated heparin alone in 21% and other anti-coagulants such as aspirin, warfarin and dextran in 5%.⁹ Mechanical methods such as the foot pump, which has been shown to be as effective as enoxaparin in reducing thromboembolism, but with fewer soft-tissue side-effects, was only used by 5% of surgeons as the sole method of thromboprophylaxis.¹⁰

The choice of pharmacological agent is also controversial. We use unfractionated heparin, which has been shown to reduce the incidence of venographically-detected deep-vein thrombosis by 70%.¹¹ Generally, this has, however, been superseded by low-molecular-weight heparin which has been shown to be superior in reducing the incidence of the formation of thrombi and is associated with a lower incidence of HIT (5% for unfractionated heparin and 1% for low-molecular-weight heparin).¹²

There is still much debate surrounding the role of pharmacological thromboprophylaxis in THA. Based on current evidence, it cannot be recommended routinely to all patients. The decision as to whether to anticoagulate or not must lie with the operating surgeon who has to weigh up the risks and benefits. Our case demonstrates well a rare but devastating, complication of the use of heparin. There are few reports in the orthopaedic literature describing loss of a leg after the use of heparin in THR.¹³ Greater awareness of HITTS is needed by all surgeons.

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MERALGIA PARAESTHETICA

A complication of a patient-positioning device in total hip replacement

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We describe three patients who developed meralgia paraesthetica after the use of a well-padded and carefully-placed patient-positioning device in total hip replacement.

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Meralgia paraesthetica is characterised by altered sensation and pain on the anterolateral aspect of the thigh, corresponding to the distribution of the purely sensory lateral cutaneous nerve of the

thigh. The clinical syndrome has an established association with pressure on the nerve. We present three cases of meralgia paraesthetica, which occurred as a result of the use of a well-padded and carefully-placed patient-positioning device during total hip replacement.

Case reports

Case 1. A 56-year-old woman underwent a routine left total hip replacement (THR) in the lateral position using the Hardinge approach under spinal anaesthesia. A patient-positioning system was used, which consisted of three padded bolsters, one for each anterior superior iliac spine and one for the sacrum (Fig. 1). This device was made in the hospital works department. It had been in use for over ten years and was similar in design to commercially-available systems.

Immediately after operation there was bilateral symmetrical sensory loss in the anterolateral aspect of both thighs, but no motor deficit or leg pain. CT of the spine excluded a haematoma

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