

Epidural haematoma after epidural catheter removal under multiple anticoagulant therapy: report of two cases

Ageliki Pandazi¹, Periandros Karamanis¹, Paraskevi Matsota¹, Stella Kontogiannopoulou¹, Kostantinos Soultanis², Georgia Kostopanagiotou¹

¹2nd Department of Anaesthesiology, University of Athens School of Medicine, Attikon Hospital, Athens, Greece

²1st Department of Orthopaedics, University of Athens School of Medicine, Attikon Hospital, Athens, Greece

Submitted: 23 September 2009

Accepted: 7 October 2009

Arch Med Sci 2010; 6, 2: 281-282

DOI: 10.5114/aoms.2010.13910

Copyright © 2010 Termedia & Banach

Corresponding author:

Ageliki Pandazi
2nd Department
of Anaesthesiology
University of Athens School
of Medicine, Attikon Hospital
1 Rimini St, Chaidari
Athens, Greece
Phone: +30 210 5832371
Fax: +30 210 5326413
E-mail: angpant@med.uoa.gr

Abstract

We report two cases of epidural haematoma that probably developed after removal of the epidural catheter in patients receiving multiple anticoagulant and antiplatelet therapy. The first case is a 77-year-old male patient who underwent femoropopliteal artery bypass grafting surgery. The second case is a 77-year-old woman who underwent a semi-total replacement of the right hip, three days after she had a subtrochanteric fracture. Emergency laminectomy was performed in both patients but none experienced a full recovery.

Key words: epidural haematoma, antiplatelets, anticoagulants.

Case report

The first case is a 77-year-old male patient who underwent femoropopliteal artery bypass grafting surgery. He had a medical history of hypertension, coronary artery disease and type II diabetes mellitus. His medications included nebivolol, amlodipine, furosemide, isosorbide mononitrate and clopidogrel (that was discontinued 7 days before operation and substituted by enoxaparin sodium 4,000 IU subcutaneously [SC] twice daily). The second case is a 77-year-old woman who underwent a semi-total replacement of the right hip, three days after she had a subtrochanteric fracture. She had a medical history of coronary artery disease and left heart failure, atrial fibrillation and type II diabetes mellitus. Her medication included furosemide and short acting insulin. During her hospitalization she was given enoxaparin 6,000 IU SC once daily. The last dose of enoxaparin sodium was injected 24 and 12 h respectively before scheduled operations. Coagulation tests and thrombocyte count before both operations were within normal values. A single pass, atraumatic epidural (ED) was performed at the L₃-L₄ interspace with an 18-gauge Tuohy epidural needle and an epidural catheter was placed in both cases and remained for postoperative analgesia. Both patients recovered sensation and full motor power in the lower limbs after the end of the operation. Removal of the ED catheter was decided, in the first case, on the 1st postoperative day. Coagulation tests and thrombocyte count were checked and found within normal values. The patient had normal sensation and strength of the lower limbs at the time of catheter removal. Two hours after catheter removal

the patient was given enoxaparin 4,000 IU SC. At that time the patient started complaining of severe backache, especially at the site of the ED puncture, and 2 h later he started complaining of emerging motor loss in the lower limbs. Neurological examination of the patient revealed paraplegia with no sensory deficit. The magnetic resonance imaging that was performed showed an epidural haematoma (EH) extending from T₁₀ to L₂ and compressing the spinal cord. An emergency laminectomy from T₉ to L₂ was performed 10 h after the recognition of paraplegia and the EH was evacuated. Over the next 2 months he started recovering motor power in the lower limbs, but never experienced a full recovery, since he died because of sepsis due to an infection of the surgical trauma on his back. The second patient had her ED catheter accidentally removed on the 2nd postoperative day approximately 2 h after the administration of enoxaparin (she received enoxaparin 6,000 IU once daily). Two h later, the neurological examination showed emerging weakness in the left leg and a sensory deficit at the T₈-T₁₀ dermatomes (especially on the left). The MRI of the spine that was then performed revealed a posterior EH at the T₇-T₉ neurotomes with the presence of air on its top and significant compression of the spinal cord. Twelve hours after estimated catheter removal the patient underwent a T₆-L₁ laminectomy and evacuation of the haematoma. There was minimal improvement in the neurological symptoms in the first 24 h after surgery. Two months after surgery only poor improvement of her symptoms was observed.

Discussion

Data on the incidence of EH following neuraxial blockade are mainly based on audit studies and case reports [1]. Most case reports describe haematomas that were associated with the placement of an epidural catheter [1, 2]. Predisposing factors for the development of an EH following neuraxial blockade are considered to be pre-existing altered patients' coagulation due to either an inherent coagulopathy or the administration of anticoagulants, spinal vascular malformations, hypertension, advanced age, female gender, and bony spinal pathology that may necessitate multiple attempts [2, 3].

Both of our patients were under enoxaparin (a low molecular weight heparin [LMWH]) perioperatively. The use of LMWH is associated with an increasing incidence of spinal EH following neuraxial blockade [4]. We complied with the American Society of Regional Anaesthesia and Pain Medicine (ASRA) recommendations for neuraxial anaesthesia and anticoagulation in both of our cases [5]. We assume that the EH in both cases occurred at the time the catheter was removed. As far as the first patient is concerned, it seems that the co-

administration of anticoagulants to patients on regular antiplatelet medications may significantly increase the risk of EH [6]. Furthermore, the antiplatelet effect of clopidogrel is irreversible and it is possible that the period of 7 days before neuraxial blockade in our case was inadequate, since it takes up to 10 days for new platelets to completely replace affected ones and Keser has shown that a period of 10 days is necessary for the bleeding time to return to normal values after discontinuing clopidogrel [7]. The haematoma of the second case can be attributed to removal of the catheter during the period of the anticoagulant action of enoxaparin. Advanced age, female gender and orthopaedic operation may have also contributed to haematoma formation. The presence of the haematoma at the T₇-T₉ neurotomes, despite the fact that the epidural approach was at the L₃-L₄ interspace, may also raise the question of a spontaneous haematoma coinciding with catheter removal.

The early recognition and evacuation of the EH are of major importance for a good outcome. It has been observed that patients who were operated on within 12 h of developing symptoms compared with those operated on later had a better outcome, while other anaesthetists propose an even shorter interval of < 8 h for improving prognosis [3]. The evacuating operation in both of our cases was performed at the latest permitted limits. This fact, in combination with the advanced age and the multiple medical problems of our patients, might have contributed to the bad outcomes.

These two cases underscore the necessity of close neurological monitoring in every patient having an ED catheter for postoperative analgesia, especially if anticoagulant treatment is administered.

References

1. Tam NL, Pac-Soo C, Pretorius PM. Epidural haematoma after a combined spinal-epidural anaesthetic in a patient treated with clopidogrel and dalteparine. *Br J Anaesth* 2006; 96: 262-5.
2. Gottschalk A, Bischoff P, Lamszus K, Standl T. Epidural haematoma after spinal anaesthesia in a patient with undiagnosed epidural lymphoma. *Anesth Analg* 2004; 98: 1181-3.
3. Vandermeulen EP, Van Aken H, Vermeylen J. Anticoagulants and spinal-epidural anaesthesia. *Anesth Analg* 1994; 79: 1165-77.
4. Schroeder DR. Statistics: detecting a rare adverse drug reaction using spontaneous reports. *Reg Anesth Pain Med* 1998; 23: 183-9.
5. Horlocker TT, Wedel DJ, Benzon H, et al. Regional anaesthesia in the anticoagulated patient: defining the risks (the Second ASRA Consensus Conference on Neuraxial Anaesthesia and Anticoagulation). *Reg Anesth Pain Med* 2003; 28: 172-97.
6. Urmey WF, Rowlingson J. Do antiplatelet agents contribute to the development of perioperative spinal haematoma? *Reg Anesth Pain Med* 1998; 23 (Suppl 2): 146-51.
7. Keser C. Platelet aggregation in spinal anaesthesia. *Anaesthetist* 2000; 49: 234-5.