Anti-platelet agents and surgical delay in elderly patients with hip fractures

JA Harty, P McKenna, D Moloney, L D’Souza, E Masterson
Department of Orthopaedic Surgery, Midwestern Regional Hospital, Dooradoyle, Limerick, Ireland

ABSTRACT

Purpose. To assess the risk of surgical delay in elderly hip fracture patients on anti-platelet agents.
Methods. Records of 180 patients aged over 65 years with either an intertrochanteric or femoral neck fracture were reviewed. The clopidogrel group included 10 patients on clopidogrel alone and 11 others on clopidogrel and aspirin, whereas the control group included 69 on aspirin alone and the remaining 90 not on any anti-coagulants. The 2 groups were compared with regard to time to surgery, preoperative American Society of Anesthesiologists (ASA) score, pre- and post-operative haemoglobin levels, inpatient complication rates, duration of hospital stay, and 30-day mortality.
Results. In the clopidogrel and control groups respectively, the mean times to surgery were 7.2 and 2.1 days (p=0.03, t-test), the mean preoperative ASA scores were 3.35 and 2.8 (p=0.29, t-test), the mean preoperative haemoglobin levels were 119 and 115 g/l (p=0.5, t-test), the mean postoperative haemoglobin levels were 98 and 96 g/l (p=0.68, t-test), the mean durations of hospital stay were 7.4 and 3.1 days (p=0.02, t-test). The 30-day mortalities were 6/21 (29%) and 6/159 (4%) [p=0.0003, Fisher’s exact test].
Conclusion. Surgical delay in elderly patients on anti-platelet agents with hip fracture was associated with higher mortality. Despite the risk of increased blood loss, we suggest early surgery be carried out by an experienced surgeon to expedite the operating time. Pooled platelets should be given intravenously one to 2 hours preoperatively.

Key words: hip fractures; mortality; platelet aggregation inhibitors

INTRODUCTION

Acute hip fracture is common in the elderly population. It is estimated that 1.3 million such fractures occurred globally in 1990. The number is expected to increase to 2.6 million by 2025 and 4.5 million by 2050.1 Anti-platelet agents are commonly
prescribed to the elderly to combat cardiovascular thrombotic events. However, this practice increases intra-operative blood loss and influences surgical and anaesthetic procedures. Elective surgery is often performed after stopping the anti-platelet agents until the platelet pool (function) regenerates. In emergency situations there is no agreed protocol on the optimal time to surgery. Clopidogrel bisulphate is an adenosine diphosphate inhibitor often prescribed in combination with aspirin (for greater effect). Platelets exposed to clopidogrel are affected for the rest of their lifespan (7–10 days).

MATERIALS AND METHODS

Records of 180 patients aged over 65 years with either an intertrochanteric or femoral neck fracture presenting from July 2003 to January 2005 were retrospectively reviewed, after excluding persons taking anti-coagulants. Those taking clopidogrel included 21 patients: 10 took it as the only anti-platelet agent and 11 took it together with aspirin. The control group included 69 patients taking aspirin alone and 90 taking no anti-platelet drugs. The 2 groups were compared with regard to time to surgery, preoperative American Society of Anesthesiologists (ASA) score, pre- and post-operative haemoglobin levels, inpatient complication rates, duration of hospital stay, and 30-day mortality. Statistical analyses were performed using the un-paired Student’s t-test and Fisher’s exact test where appropriate.

RESULTS

In the clopidogrel group, there were 9 men and 12 women aged 72 to 92 (mean, 82) years; 12 of the patients had femoral neck and 9 intertrochanteric fractures. In the control group, there were 70 men and 89 women aged 65 to 90 (mean, 81) years; 73 patients had femoral neck and 86 intertrochanteric fractures. In the respective groups, the mean times to surgery were 7.2 and 2.1 days (p=0.03, t-test), the mean preoperative ASA scores were 3.35 (range, 1–4) and 2.8 (range, 2–5) [p=0.29, t-test], the mean preoperative haemoglobin levels were 119 and 115 g/l (p=0.5, t-test), the mean postoperative haemoglobin levels were 98 and 96 g/l (p=0.68, t-test), the mean durations of hospital stay were 7.4 and 3.1 days (p=0.02, t-test). The respective 30-day mortality rates were 6/21 (29%) and 6/159 (4%) [p=0.0003, Fisher’s exact test]. In the clopidogrel group, 2 patients died preoperatively from generalised sepsis and cardiovascular complications caused by pneumonia. The remaining 4 patients died within 30 days from either cardiovascular or respiratory causes; none was related directly to clopidogrel.

DISCUSSION

In the control group, the mean time to surgery, mean duration of hospital stay, and 30-day mortality were comparable to those reported in previous studies. However, corresponding parameters in the clopidogrel group were significantly greater, and comparable to those described for conservative management without surgery. Management of such patients is a growing problem as the number of patients with hip fractures receiving anti-platelet agents increases.

Although anti-platelet drugs are beneficial for the long-term reduction of vascular events, evidence supporting their peri-operative use is scarce. There is no consensus or protocol on the optimal time to surgery for patients on anti-platelet drugs, despite the risks of increased intra-operative blood loss reported to ensue during elective surgery. Moreover, resort to blood transfusions was greatest among patients on both aspirin and clopidogrel.

Spinal anaesthesia is usually used for patients with compromised cardiovascular or respiratory status. In which case, epidural haematoma may occur among those taking clopidogrel. The effects of platelet transfusion can be monitored by adenosine diphosphate and epinephrine aggregometry, which is reported to enable safe central neuraxial blockade in selected patients under the cover of appropriate platelet transfusions.

The manufacturers of clopidogrel and most anaesthetists and surgeons advocate a surgical delay of 7 to 10 days in an elective setting. In elderly patients, surgical delay is associated with higher morbidity and mortality; survival is better in those having their operation on the day of admission, particularly for persons aged >80 years. In a univariate analyses of 57 315 hip fracture patients, in-hospital mortality increased from 5.8% (no delay) to 9.9% (3–7 day delay); similar increases were also noted for mortality rates 3 and 12 months after surgery. In our control group (43% patients on aspirin), neither the intra- nor post-operative complication rates were excessive, as patients were operated on early.

Patients awaiting surgery are fasted and this may also adversely affect their nutritional status and operative outcome. Due to the lack of a protocol, many clopidogrel patients were fasted on multiple days with the prospect of surgery, only to be cancelled.
the following morning. This repeat fasting may also have contributed to their poor outcome.

Our study may have been confounded by the fact that our patients on clopidogrel already had a higher preoperative morbidity, which was then reflected postoperatively. Had the allocation to clopidogrel been randomised, this bias could have been overcome. Furthermore, the number of patients in the clopidogrel group was small, which could have affected the validity of results. Thus, to attribute the difference in mortality to the use of clopidogrel may be over-simplistic and biased. Nevertheless, receipt of clopidogrel should alert surgeons to the risk of surgical delay even if the patient is otherwise fit for the operation.

We suggest early surgery for elderly hip fracture patients on anti-platelet agents, despite the risk of increased blood loss, as the morbidity and mortality associated with surgical delay is about 22%. All patients should have their platelet counts, international normalised ratio, activated partial thromboplastin time, and bleeding time checked preoperatively, and they should be cross-matched for adequate quantities of red blood cells and platelets. Platelets should be administered one to 2 hours preoperatively and operating surgeon should be experienced (to expedite the procedure).

REFERENCES