Nadroparin

Nadroparin is an anticoagulant belonging to low molecular weight heparins. Nadroparin was developed by Sanofi-Synthélabo. Nadroparin is used in general and orthopedic surgery to prevent thromboembolic disorders, and as treatment for deep vein thrombosis.

Patients undergoing CPA tumour excision in the period between January 2014 and November 2015 received nadroparin as a single therapy. Patients treated since November 2015 received, in addition to this therapy, peri-operative compression stockings as venous thromboembolism (VTE) prophylaxis due to a change in protocol. VTE was defined as symptomatic deep vein thrombosis or pulmonary embolism and was confirmed via radiological imaging or autopsy.

A total of 146 consecutive patients were reviewed. Treatment groups were comparable with respect to demographics and risk factors. Six of the 60 patients (10.0%; 95% confidence interval [CI] 3.8-20.5) receiving nadroparin single therapy developed symptomatic VTE. One out of 86 patients (1.2%; 95% CI 0-6.3) treated with combination therapy developed VTE ($p = 0.019$) with a risk difference of 8.8% (95% CI 1.43-19.0). In comparison to combination therapy, nadroparin single therapy showed a relative risk of 8.6 (95% CI 1.1-69.6).

Adding compression stockings to peri-operative nadroparin, as a prophylactic strategy for thromboembolic complications in patients undergoing surgical intervention for CPA tumours, was associated with a significant reduction in the occurrence of VTE [1)].

Medical records of 158 adult patients with an aSAH were retrospectively analyzed. Those patients treated endovascularly for their ruptured aneurysm were included in this study. They received either high-dose (twice daily 5700 AxaIE) or low-dose (once daily 2850 AxaIE) nadroparin treatment after occlusion of the aneurysm. Medical charts were reviewed and imaging was scored by 2 independent neuroradiologists. Data with respect to in-hospital complications, peri-procedural complications, discharge location, and mortality were collected.

Ninety-three patients had received high-dose nadroparin, and 65 patients prophylactic low-dose nadroparin. There was no significant difference in clinical DCI occurrence between patients treated with high-dose (34%) and low-dose (31%) nadroparin. More patients were discharged to home in patients who received high-dose nadroparin (40%) compared to low-dose (17%; odds ratio [OR] 3.13, 95% confidence interval [95% CI]: 1.36-7.24). Furthermore, mortality was lower in the high-dose

group (5%) compared to the low-dose group (23%; OR 0.19, 95% CI: 0.07-0.55), also after adjusting for neurological status on admission (OR 0.21, 95% CI: 0.07-0.63).

Patients who were treated with high-dose nadroparin after endovascular treatment for aneurysmal SAH were more often discharged to home and showed lower mortality. High-dose nadroparin did not, however, show a decrease in the occurrence of clinical DCI after aSAH. A randomized controlled trial seems warranted [2)].

The objective of a study was to prospectively analyze the rate of postoperative hemorrhage during a 3-year period of early postoperative administration of the low molecular weight heparin nadroparin (Fraxiparin) plus compression stockings in a large cohort of patients undergoing intracranial surgery.

A total of 2823 intracranial neurosurgical procedures, performed between June 1999 and 2002, were studied. Of these operations, 1319 (46.7%) were major intracranial surgical procedures (Group 1). Group 2 comprised 1504 operations (53.3%) considered to be minor surgical procedures (e.g., shunt procedures, biopsies). All patients except those with transnasal transsphenoidal removal of pituitary tumors underwent early postoperative imaging (computed tomography or magnetic resonance imaging) to determine postoperative hemorrhage. All significant postoperative hematomas (defined as those requiring surgical evacuation because of relevant space occupation and/or neurological deterioration) were treated surgically. Prophylaxis of venous thromboembolic events included early (<24 h) postoperative administration of 0.3 ml nadroparin subcutaneously plus intra- and postoperative compression stockings until discharge.

Forty-three major postoperative hemorrhages (1.5%) were observed after 2823 intracranial procedures (95% confidence interval, 1.1-2.05). Forty-two (3.2%) of 1319 postoperative hematomas occurred in patients undergoing major intracranial procedures (Group 1). There was only 1 (0.07%) significant hemorrhage after 1504 minor intracranial procedures (Group 2). A subgroup analysis of patients who needed preoperative anticoagulation because of medical comorbidity did not reveal an increased frequency of postoperative hematoma when anticoagulation was stopped 24 hours before surgery P = 0.1, chi(2) test; 95% confidence interval, 0.89-3.0).

This report describes the largest prospective study conducted to date to determine the hemorrhage rate after early postoperative anticoagulation. The results support the concept of postoperative pharmacological thromboembolic prophylaxis in patients undergoing intracranial surgery [3)].

Nurmohamed et al. performed a multicentre, randomized, double-blind trial in neurosurgical patients to investigate the efficacy and safety of adding a low molecular weight heparin (LMWH), nadroparin, initiated postoperatively, to graduated compression stockings in the prevention of VTE. Deep-vein thrombosis was detected by mandatory venography. Bleeding was determined according to pre-defined objective criteria for major and minor episodes. An adequate bilateral venogram was obtained in 166 of 241 LMWH patients (68.9%) and 179 of 244 control patients (73.4%). A total of 31 of 166 LMWH patients (18.7%) and 47 of 179 controls patients (26.3) had VTE up to Day 10 postoperatively (p = 0.047). The relative risk reduction (RRR) was 28.9%. The rates for proximal deep-vein thrombosis/pulmonary embolism were 6.9% and 11.5% for the two groups, respectively (RRR: 40.2%; p = 0.065). Secondary analyses involved all VTE up to day 56 post-surgery which was detected in 33 patients of 241 in the LMWH group (13.7%) and 51 of 244 control patients (20.9%; RRR 34.5%; p = 0.018). The corresponding percentages for proximal deep-vein thrombosis/pulmonary embolism were 5.8% and 10.2% for the two groups, respectively, giving a RRR of 43.3%; p = 0.36. Major bleeding

complications, during the treatment period, occurred in six low molecular weight heparin treated patients (2.5%) and in two control patients (0.8%); p = 0.87. A higher mortality was observed in the low molecular weight heparin group over the 56-day follow-up period (22 versus 10; p = 0.026). However, none of these deaths was judged by a blinded adjudication committee to be related to the study drug. In conclusion, this study demonstrates that the low molecular weight heparin, nadroparin, added to graduated compression stockings results in a clinically significant decrease in VTE without inducing any significant increase of major bleeding [4)].

References

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