

Elective orthopaedic surgery in patients with haemophilia and inhibitors: still a big challenge for hematologists?

M.E. Mancuso¹, G. Pasta², M.R. Fasulo¹, F. Peyvandi¹, L. Solimeno², E. Santagostino¹.
¹Angelo Bianchi Bonomi Hemophilia and Thrombosis Center and ²Department of Orthopaedic Surgery and Traumatology, Fondazione IRCCS Ca' Granda, Ospedale Maggiore Policlinico, Milan, Italy.

Background

- ✓ In the presence of high-responding inhibitors FVIII replacement therapy is no longer effective and alternative hemostatic treatments are used
- ✓ By-passing therapies, represented by activated prothrombin complex concentrate (aPCC) and activated recombinant factor VII (rFVIIa), have good efficacy rates for the treatment of mild/moderate bleeds in the home setting
- ✓ By-passing therapy allows to perform surgery in inhibitor patients, however the surgical management of inhibitor patients is still considered a big clinical challenge
- ✓ No laboratory monitoring is available for by-passing therapy
- ✓ The hemostatic response is unpredictable and may vary in the same patient.

Aim of the study

- ✓ To evaluate the clinical outcome in a retrospective series of hemophilic patients with inhibitors who underwent major elective orthopaedic surgery at a single center.

Materials and Methods

- ✓ Demographic data, medical history and details on peri- and post-operative period were gathered from patients' medical files
- ✓ Data on type of surgery, hemostatic treatment, bleeding complications, total clotting factor concentrates consumption and red blood cell transfusions were collected

Results (1)

- ✓ From 1997 to 2013, 41 major orthopaedic procedures were performed in 22 patients with hemophilia A and inhibitors (20 had severe and 2 had mild hemophilia).
- ✓ The procedures were:
 - 19 arthroplasties (17 knees, 1 hip and 1 ankle)
 - 10 arthroscopies
 - 12 miscellaneous
- ✓ Fifteen patients were adult and underwent surgery at a median age of 39 years (IQR: 33-47); seven were children and had a median age at surgery of 10 years (IQR: 8.5-11).
- ✓ The median number of procedures per patient was 2 (IQR: 1-4).

Conclusions

- ✓ Major elective orthopaedic surgery is feasible in patients with hemophilia and inhibitors and should be considered in patients who need it.
- ✓ Orthopaedic surgery in inhibitor patients can be complicated by excessive bleeding, hence careful clinical monitoring is mandatory in order to properly adjust hemostatic treatment according to clinical conditions.

Results (2)

- ✓ Eighteen patients (82%) were high-responders
- ✓ The median inhibitor titer at time of surgery was 20 BU/mL (IQR: 3-75)
- ✓ The median duration of hospital stay was 8 days (IQR: 4-11)

Hemostatic treatment

- ✓ 33 procedures in 17 patients were covered with by-passing therapy
- ✓ FVIII replacement was used for 8 procedures in 6 patients who had a median inhibitor titer at surgery of 1.0 BU/mL (IQR: 0.5-4.0)
- ✓ Hemostatic treatment was delivered by bolus injections in 30 procedures and by continuous infusion in 11 (FVIII in 7 and rFVIIa in 4)
- ✓ Tranexamic acid 10 mg/kg intravenously every 12 hours was associated with FVIII or rFVIIa in 19 procedures
- ✓ Overall, median factor consumption was:
 - 139 IU/kg/day of FVIII
 - 0.74 mg/kg/day of rFVIIa
 - 179 IU/kg/day of aPCC

Bleeding complications

- ✓ Overall, 7 patients bled (32%)
- ✓ Bleeding occurred after 11/33 procedures covered with by-passing therapy (33%) and 1/8 procedures managed with FVIII (12%)
- ✓ Bleeding was successfully managed by continuing the same drug at increased doses in 6 cases (including the case treated with FVIII) and by using sequential treatment with rFVIIa and aPCC as rescue in the other 6
- ✓ The use of tourniquet during surgery was associated with less bleeding complications (14 vs 71% in those operated without tourniquet; p<0.001)
- ✓ The median drop in hemoglobin levels was 4.1 g/dL and 14 patients received red blood cells after 22 procedures (56%)
- ✓ No deaths or thrombotic complications occurred

Disclosures

There are no relevant conflicts of interest to disclose.

