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Research Article

Pseudotumor Surgery in Haemophilia a Patient: Comparative Results between Inhibitor and Non-Inhibitor Patients

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Abstract

Introduction: The Haemophilic Pseudotumour (HP) is an encapsulated hematoma which has a tendency to progress and produce clinical symptoms. It is a rare but serious complication of haemophilia. The current standard curative treatment for all pseudotumours is surgical.

Aim: The aim of this study is to show surgical results and complications in both Inhibitor Patients (IP) and Non-Inhibitor Patients (NIP) with pseudotumors.

Patients and Methods: Fourteen patients with severe haemophilia A were treated for pseudotumor in the Haemophilia Foundation in Buenos Aires, Argentina between 2000 and 2012. Seven of these patients are Non Inhibitor Patients (NIP), and 7 are Inhibitors Patients (IP). Patients were evaluated for use of factor in the post-op period, duration of surgery, transfusions requirements and length of hospitalization after surgery. All data were analysed using the Kolmogorov-Smirnov test for non-parametric independent samples.

Results: There were no differences between groups of non-inhibitor and inhibitor patients regarding blood transfusion requirements, length of hospitalization stay and days on replacement or by-passing therapy.

Conclusion: Our results show that, if proper haemostatic coverage is provided, pseudotumor surgery in inhibitor patients is at least as feasible as in non-inhibitor patients when the mini invasive technique is used.

Keywords: Pseudotumor; Haemophilia; Inhibitors; Prophylaxis

Introduction

The Haemophilic Pseudotumour (HP) is really an encapsulated hematoma which has a tendency to progress and produce clinical symptoms which depend on its anatomical location. It is a clinical entity rather than a specific pathological lesion [1].

Starker first described this clinical entity in 1918 [2]. A haemophilic pseudotumor is a collection of blood surrounded by a capsule of thick fibrous connective tissue. It is a rare but serious complication of haemophilia.

In 1996 Gunning estimated the prevalence to be 1% of patients with severe or moderate disease, and 10% of patients who develop antibodies [3,4].

The pseudotumor is a hematoma that grows uncontrollably, eroding adjacent tissues. The bone is affected more rapidly when growth is intraosseous than if it is in the soft tissues. Soft tissue pseudotumors quickly damage the muscles and the skin producing a tension that can lead to necrosis, and leaving the patient vulnerable to bacterial infections. The vascular and nerve conduit is not usually affected but pseudotumor compression can sometimes cause neurapraxia.

The current standard curative treatment for all pseudotumours is surgical and the conventional treatment consists of the resection of the pseudotumor and the pseudocapsule [5]. In general, factor replacement alone is inadequate [6]. We report long term results of the application of the mini invasive technique for treatment of pseudotumors described at the Musculoskeletal Congress in Stresa, Italy [7].

The development of inhibitors, which can occur after treatment with either high-purity, viral-inactivated plasma derived products or recombinant products, is the most significant treatment-related complication. When present, the inhibitor inactivates the biological activity of infused factor VIII or factor IX, making the patient refractory to treatment. Between 10 and 30 % of patients with severe haemophilia A and 2-5% of patients with severe haemophilia B or mild/moderate haemophilia A, develop an inhibitor against factor VIII or IX [8]. Only 15 years ago, Robert Duthie wrote that "elective surgery is absolutely contraindicated in the presence of significant levels of FVIII antibodies" [9]. The general approach has been that surgery should be carried out only if absolutely necessary, in emergency situations. Indeed, concern over intraoperative and postoperative bleeding complications discourages many people with haemophilia and inhibitors [10].

Our experience shows that pseudotumor surgery in Patients with Haemophilia (PWH) and inhibitor is possible. In 2012 we presented a case series of six inhibitor patients with 7 pseudotumours who were treated surgically with satisfactory results [11].

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Table 1: Characteristics by patient. Patients 1-7 Non Inhibitor Patients (NIP); 8-14 Inhibitor Patients (IP).

Patient	Age	Type of Haemophilia	Inhibitor	Location	Skin necrosis	Factor usage post-op (days)	Tranfusion requirements (units)	Surgery duration (hours)	Hospital stay (days)
1	46	AS	No	thigh	No	24	4	5	140
2	55	AS	No	femur	Yes	18	48	5	21
3	38	AS	No	femur	No	16	0	4	60
4	31	AS	No	femur	No	10	2	3	11
5	33	AS	No	calcaneus	No	15	2	4	23
6	29	AS	No	tibia	No	12	0	3	24
7	39	AS	No	thigh	No	16	0	3	27
8	12	AS	Yes	calcaneus	No	8	0	1	21
9	12	AS	Yes	calcaneus	No	14	0	1	16
10	61	AS	Yes	thigh	No	10	46	6	176
11	13	AS	Yes	tibia	No	10	1	4	7
12	18	AS	Yes	tibia	No	13	0	1	15
13	29	AS	Yes	femur	Yes	16	10	6	28
14	13	AS	Yes	tibia	No	5	0	2	5

The present study compares treatment outcomes in both inhibitor and non inhibitor patients with pseudotumors with similar characteristics.

The aim of this study is to show the surgical results and complications in both Inhibitors Patients (IP) and Non-Inhibitor Patients (NIP) with pseudotumors.

Patients and Methods

We compare 14 cases of haemophilic pseudotumors treated by a single surgeon at a single centre, the Haemophilia Foundation in Buenos Aires, Argentina which receives patients from across the country. The 14 patients had severe haemophilia A. They were divided into two groups. One included 7 NIP with 7 HP: two in the thigh, three in the femur, one in the tibia and one in the calcaneus. Their mean age was 39 (range 29-55). The other group included 7 IP with 7 HP: one in the thigh, one in the femur, three in the tibia and 2 in calcaneus. Their mean age was 23 (range 12-61). One patient in each group had an HP of the thigh with skin necrosis (Table 1).

Surgical procedure

All patients had x-rays and MRIs at baseline to assess the size and content of their lesions, and all were treated with the same surgical approach. Under general anaesthesia, a small incision was made in each cavity. The laparoscopic cannula was introduced, and the contents of each cavity were removed by suction and the cavities were then repeatedly washed with physiologic solution. The cavities were examined with the laparoscopic cannula to ensure there were no traces of blood clots. The cavities were then filled with hydroxiapatite coralline in bone pseudotumors, and with spongostane in soft pseudotumors. The wound was closed with separate nylon stitches and a vacuum system was put in place [12].

Haematological procedure

Before surgery, recovery measure was performed in all patients without inhibitors. The target factor (VIII/IX) before surgery was between 80% and 100%. The same levels were maintained by continuous infusion for three days, then levels between 60-80% for the next two days and levels near 50% for the last 3-4 days. After that, one bolus infusion per day was performed to complete 7-15 days of treatment and then secondary prophylaxis was prescribed.

Table 2: Results of the comparison of baseline characteristics and surgical data of both groups (NIP and IP) using the Kolmogorov-Smirnov test.

	Non Inhibitor Patients (NIP) n=7	Inhibitor Patients (IP) n=7	p
	(Mean±SD)	*(Mean±SD)*	
Duration of surgery (hours)	4 ± 1	3 ± 2	0,203
Factor usage post-op (days post-op)	16 ± 4	11 ± 3,8	0,203
Transfusion (units)	8 ± 18	8 ± 17	0,938
Length of hospitalization (days)	44 ± 45	38 ± 61	0,541
Age (years)	39 ± 9	23 ± 18	0,060

In patients with inhibitors, an initial dose of recombinant factor FVIIa (rFVIIa) 150-200 μg/kg was infused immediately before surgery. The following doses were 90μg/kg every two hours for two days, then every three hours for the next three days and every four hours the last three days. Patients received a high daily dose during the following 3 to 7 days after which secondary prophylaxis was prescribed.

Statistical analysis

Patients were evaluated for: use of factor in the post-op period, duration of surgery, blood transfusion requirements and length of hospital stay after surgery. All data were analysed using the Kolmogorov-Smirnov test for non-parametric independent samples.

Results

All variables analyzed were comparable in both groups. Mean duration of surgery for NIP was 4 hours, and 3 hours for IP (p: 0.203). The number of days of factor usage after surgery was 16 for NIP and 11 for IP (p: 0.203). Both NIP and IP required 8 of blood transfusions

(p: 0.938). There was no significant difference between NIP and IP length of hospitalization required either: 44 and 38 days respectively (p: 0.541) Table 2.

One patient from each group died in the post-operative period due to sepsis. Both had HP in their femurs. The rest evolved favourably: no thrombotic events were detected in follow up and recovery was complete.

There were no differences between groups of non-inhibitor and inhibitor patients regarding blood transfusion requirements, length of hospitalization stay and days on replacement or by-passing therapy.

Discussion

We report the findings of our single-centre experience in patients with haemophilia with and without inhibitors who underwent elective HP surgery.

The post-operative evolution of IP did not differ from that of NIP in terms of blood transfusion requirements, length of hospital stay and days on replacement or by-passing therapy when the mini invasive technique was used.

One patient from each group died in the post-operative period due to sepsis. Both had severe femur bone pseudotumors with skin necrosis. Skin necrosis should be considered a bad prognosis. Rodriguez-Merchan et al. reported that the mortality rate associated with pseudotumor of the femur is around 20% [3].

Our results show that given proper haemostatic coverage and adequate surgical techniques pseudotumor surgery in inhibitor patients is possible and does not differ from surgery in non-inhibitor patients with regards to blood transfusion requirements, length of hospital stay and days on replacement or by-passing therapy.

The results of a recent cost–benefit study suggest that surgery in haemophilia patients with inhibitors may be cost-effective due to the reduced number of bleedings or improved quality of life experienced by these individuals following surgery [10].

Conclusion

Prevention of the arthropaty is a major goal of haemophilia treatment. Our results show that, if proper haemostatic coverage is provided, pseudotumor surgery in inhibitor patients is at least as feasible as in non-inhibitor patients when the mini invasive technique is used.

References

1. Caviglia HA, Fernandez-Palazzi F, Galatro G, Perez Bianco R. Gilbert Percutaneous treatment of haemophilic pseudotumours. Musculoskeletal aspects of haemophilia. Rodriuez Merchan EC, Goddard NJ, Lee CA, editors. Blackwell Science. 2000; 97-104.
2. Starker L. Kochenusur durch ein homophiles subperiostal Hamaton. Mitt Grenzgeb Med Chir. 1918; 31: 381–415.
3. Rodriguez Merchan EC. The haemophilic pseudotumour. Int Orthop. 1995; 19: 255-260.
4. Gunning A. The surgery of haemophilic cysts. Treatment of haemophilia and other coagulation disorders. Biggs R, MacFarlane RG, editors. Oxford, UK: Blackwell Scientific. 1966.
5. Gilbert MS. Musculoeskeletal aspects of haemophilia. Surgical Management of the adult haemophilic blood cyst (Pseudotumour). Rodriuez Merchan EC, Goddard NJ, and Lee CA, editors. Oxford, UK: Blackwell Science. 2000; 92-96.
6. McDonald EJ, Corbett R, Smith MP. Successful management of a distal haemophilia pseudotumour: case illustration and literature review. Haemophilia. 2008; 14: 987-988.
7. Caviglia H. Pseudotumors. 10Th Musculoskeletal Congress, Stresa-Italy. 2007.
8. Rodriguez-Merchan EC. Orthopaedic surgery in persons with haemophilia. Thromb Haemost. 2003; 89: 34-42.
9. Duthie RB. Reconstruction surgery and joint replacement. The management of musculoskeletal problems in haemophilias. Int Duthie RB, Giagrande OLF, Dodd CAF editors, Oxford, UK: Oxford University Press. 1994; 193.
10. Caviglia H, Candela M, Galatro G, Neme D, Moretti N, Bianco RP. Elective orthopaedic surgery for haemophilia patients with inhibitors: single centre experience of 40 procedures and review of the literature. Haemophilia. 2011; 17: 910-919.
11. Caviglia H, Galatro G, Candela M, Moretti R, Perez Bianco RP. Pseudotumours in patients with inhibitors. Haemophilia. 2012; 18: 1–208.
12. Hvid I, Soballe K, IngerslevJ. Elective orthopaedic surgery in haemophilia patients with high-responding inhibitors. Inhibitors in patient with haemophilia. EC Rodriguez –Merchan, Lee CA, editors. (Oxford, UK: Blackwell, Novo nordisk). 2002; Ch 27.

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