

Clopidogrel Induced Late Hemarthrosis Following Total Knee Arthroplasty: Case Report

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1. Abstract

1.1. Introduction: Recurrent hemarthrosis is a relatively rare complication that can affect outcome of a total knee arthroplasty.

1.2. Case report: A 62 years old man presented with swelling and pain in his right knee two years after a total knee arthroplasty. He was just switched from acetylsalicylic acid 100mg/day to clopidogrel 75mg/day. Intra-articular aspirations revealed blood. Cultures, blood work and diagnostic studies did not reveal any pathologies. Cessation of clopidogrel and conservative treatment provided complete resolution of the symptoms.

1.3. Conclusion: Recurrent hemarthrosis after total knee arthroplasty is uncommon, but have significant effects. All anticoagulant medications, especially clopidogrel should be stopped if at all possible, even if the coagulation parameters are in physiologic limits.

2. Introduction

Spontaneous hemarthrosis following total knee arthroplasty (TKA) is relatively rare, with an estimated incidence between 0.5% and 1.6% [1,2]. Time from knee replacement to first episode of bleeding was reported to range from 2 weeks to 12 years. The causes can be broadly divided into local and general. Local causes can be subdivided into early and late. Direct vascular injury, pseudoaneurysm, arteriovenous fistula, arterial aneurysm can be counted on early local causes. The most common causes of late local factors are synovial impingement and mechanical factors. General causes occur as a result of genetic, systemic or acquired conditions as hemophilia, pigmented villonodular synovitis (PVNS), anticoagulation medications and medical factors [2].

3. Case Report

A 61 years old man with gonarthrosis had undergone a right total knee arthroplasty (TKA) 2 years ago. The patient was on lifelong acetylsalicylic acid 100mg/day therapy for coronary artery disease however; his coagulation parameters were well controlled throughout the surgery.

The surgery was performed by medial parapatellar approach, with combined spinal and epidural anesthesia. There were no bleeding complications during the operation. The post-operative period was uneventful and the patient successfully followed a strict physical therapy program. The patient was discharged on the 5th postoperative day. He was prescribed enoxaparin 40mg/day for deep venous thrombosis prophylaxis for one month, and then he was switched to acetylsalicylic acid 100mg/day as his usual treatment for coronary artery disease. He had taken acetylsalicylic acid 100mg/day for 2 years. The patient developed gastrointestinal irritation symptoms after 2 years and acetylsalicylic acid 100mg/day was switched to clopidogrel 75mg/day, following 2 weeks of clopidogrel treatment the patient had sudden swelling and progressive pain in his right knee. He experienced intermittent episodes of swelling and pain. Intra-articular aspirations revealed blood. Cultures were negative in all aspirations. CBC, ESR, CRP and blood coagulation parameters were in normal limits. Conventional X-rays and 3D-CT evaluations did not suggest any component malposition (figure 1).



Figure 1: Ap and Lateral x rays

The doppler-USG, CT angiography and arterio-venous angiography did not demonstrate the source of the bleeding, or any vascular malformation and there were no other unusual findings (figure 2-3).

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Figure 2: Angiography of the right knee. Arrow indicates hematoma.

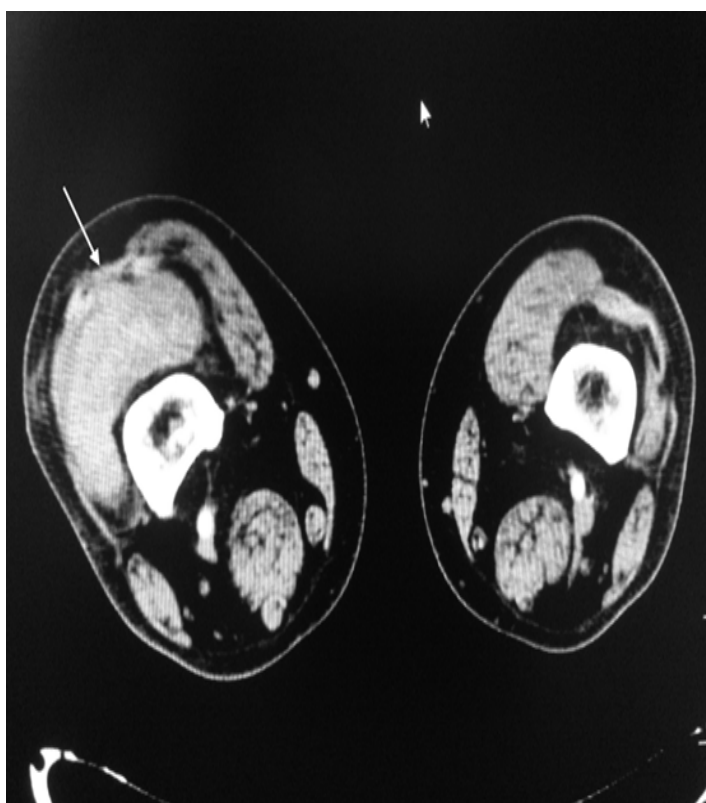


Figure 3: CT demonstrates hematoma, arrow.

The extremity was immobilized with an above knee splint. Rest, ice and elevation of the extremity were implemented. Clopidogrel was stopped after the 10th episode and acetylsalicylic acid 100mg/day was prescribed. Two weeks later hemarthrosis of the right knee was completely resolved.

4. Discussion

This case report describes the development of spontaneous recurrent episodes of hemarthrosis in a patient 2 years after a successful total knee arthroplasty. The patient was on long-term acetylsalicylic acid 100mg/

day anti-coagulation therapy for coronary artery disease. Acetylsalicylic acid 100mg/day was switched to clopidogrel 75mg/day for the patient developed gastric intolerance, and 2 weeks later first episode occurred.

The prothrombin time, activated partial thromboplastin time, and the bleeding time should be measured in patients with recurrent hemarthrosis. These tests may well be within normal limits even in patients with coagulation disorders. Further evaluation of platelet function may be necessary including thrombin consumption index, measurement of Von Willebrand factor levels, platelet factor 3 availability and platelet aggregation studies especially in certain ethnic populations [3].

Both aneurysm and pseudo-aneurysm are relatively easy to diagnose by duplex ultrasonography. It is cheap, sensitive and readily available and thus can be very useful in determining whether a swollen knee has a vascular component to it. A hyper echoic mass with bi-directional Doppler flow is usually seen [4].

Management of recurrent hemarthrosis can be divided into non-surgical, early surgical interventions, late surgical interventions and other treatments [2]. First, all anticoagulant medication should be stopped if at all possible. Aspiration of the joint can be performed to confirm the diagnosis and provide pain relief. Ice or cryotherapy in addition to aspiration may help to reduce the swelling further. Cast or brace immobilization [5] followed by gradual return to normal activities will prevent excessive movement that may cause the bleeding to restart. However, conservative therapy is successful in only one third of the cases [6].

Angiography and angiographic embolization have been successfully used as a first line diagnostic and therapeutic tool. The technique of angiographic embolization is largely used in the early group of patients with recurrent hemarthrosis where a pseudo-aneurysm or arteriovenous fistula is diagnosed [4]. However, it has also been successful in the late group where angiography reveals a vascular blush and embolization diminishes the blood flow to the hypertrophic synovial tissue thereby reducing the likelihood of recurrent bleeding [7,8].

If symptoms do not resolve after those treatments, arthroscopic or open synovectomy have been recommended, and this is curative in most cases [1,6]. The advantages of arthroscopic versus open synovectomy are; less soft-tissue dissection, less bleeding (which is associated with lower complication rates), and easier post-operative care [5]. Synovectomy has been recommended when symptoms do not resolve after conservative treatment. Worland and Jessup reviewed 1,400 primary TKAs and found the incidence of hemarthrosis to be 0.5%[1]. A proliferative mass of synovium is found in most cases, and most patients benefit from synovectomy if they fail non-operative [1,6].

Only one case of clopidogrel induced hemarthrosis was previously reported [9]. The patient in that case experienced pain and swelling 14 days after a total knee arthroplasty. She was on clopidogrel 150 mg

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daily. Our patient developed hemarthrosis two years after the total knee arthroplasty when his medication was changed to clopidogrel 75mg/day from acetylsalicylic acid 100mg/day. He had not experienced such an episode for two years while using acetylsalicylic acid, and his symptoms resolved with immobilization, rest, ice, elevation, and discontinuation of clopidogrel.

5. Conclusion

Recurrent hemarthrosis after total knee replacement is rare. All anticoagulant medication should be stopped if at all possible, even if the coagulation parameters are in physiologic limits. Expert help from hematologists, vascular surgeons and interventional radiologists is important to establish the most appropriate method of managing this condition.

6. Clinical Message

Discontinuation of clopidogrel and nonsurgical management may yield satisfactory relief in cases of hemarthrosis after total knee arthroplasty.

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