SOCIEDADE BRASILEIRA DE ORTOPEDIA E TRAUMATOLOGIA

RBO REVISTA BRASILEIRA DE ORTOPEDIA

www.rbo.org.br

Original Article

Venous thromboembolism prophylaxis after total knee arthroplasty (TKA): aspirin *vs.* rivaroxaban☆

Jose Luiz Colleoni, Fernando Noel Ribeiro, Paulo Augusto Castro Mos, João Paulo Reis, Henrique Rosa de Oliveira, Beatriz Kawata Miura*

Hospital Mario Covas, Faculdade de Medicina do ABC, Santo André, SP, Brazil

ARTICLE INFO

Article history:
Received 6 October 2016
Accepted 15 December 2016
Available online 6 December 2017

Keywords:
Knee
Arthroplasty
Osteoarthritis

ABSTRACT

Objectives: To compare the efficacy and safety of aspirin and rivaroxaban in preventing venous thromboembolism (VTE) after total knee arthroplasty (TKA).
Methods: Thirty-two patients with osteoarthritis of the knee and knee arthroplasty indication were selected. The operated patients were randomized into two groups (A and B). Group A received 300 mg of acetylsalicylic acid (aspirin) and Group B received 10 mg of rivaroxaban daily for 14 days. Follow-up was performed weekly for four weeks and evaluated the presence of signs and symptoms of DVT, the healing of the surgical wound, and possible local complications such as hematoma, and superficial or deep infection that required surgical approach.
Results: It was verified that there were no differences between groups (rivaroxaban and aspirin) regarding gender, age, and ($p > 0.05$). After using the general linear model (GLM) test, it was found that there was a decrease in Hb and Ht levels, preoperatively and at one, three, seven, and 14 days (Hb: $p = 1.334 \times 10^{-30}$; Ht: $p = 1.362 \times 10^{-28}$). However, they did not differ as to the type of medication (Hb: $p = 0.152$; Ht: $p = 0.661$). There were no identifiable differences in local complications, systemic complications, deep vein thrombosis (DVT), readmission to hospital, reoperation, or death ($p > 0.05$) between groups (rivaroxaban and aspirin).
Conclusions: Both aspirin and rivaroxaban can be considered useful among drugs available VTE the prevention after TKA.

Profilaxia do tromboembolismo venoso após artroplastia total de joelho: aspirina *vs.* rivaroxabana

Palavras-chave:
Joelho
Artroplastia

RESUMO

Objetivos: Comparar a eficácia e a segurança da aspirina e rivaroxabana na prevenção de tromboembolismo venoso (TEV) após a artroplastia total de joelho (ATJ).

☆ Study conducted at the Hospital Mario Covas, Faculdade de Medicina do ABC, Santo André, SP, Brazil.

* *Corresponding author*.
E-mail: desqun@hotmail.com (P.A. Mos).

https://doi.org/10.1016/j.rboe.2017.11.007

Ostoartrose

Métodos: Foram selecionados 32 pacientes com osteoartrite do joelho e indicação de artroplastia do joelho. Os pacientes operados foram randomizados em dois grupos (A e B). Os pacientes do grupo A receberam 300 mg de ácido acetilsalicílico (aspirina) e os do grupo B receberam 10 mg de rivaroxabana diários durante 14 dias. O acompanhamento foi feito semanalmente durante quatro semanas e avaliaram-se a presença de sinais e sintomas de TVP, a cicatrização da ferida cirúrgica e possíveis complicações locais, como hematomas e infecção superficial ou profunda que necessitasse de abordagem cirúrgica.
Resultados: Foi verificado que não houve diferenças entre grupos (rivaroxabana e aspirina) quanto a gênero, idade e lateralidade ($p > 0,05$). Após a aplicação do teste *General Linear Model* (GLM), verificou-se uma queda dos níveis de Hb e Ht pré-operatórios e a um, três, sete e 14 dias (Hb: $p = 1,334 \times 10^{-30}$; Ht: $p = 1,362 \times 10^{-28}$). Entretanto, não se observaram diferenças quanto ao tipo de medicação (Hb: $p = 0,152$; Ht: $p = 0,661$). Não foram identificadas diferenças entre os grupos (rivaroxabana e aspirina) quanto a complicações locais, complicações sistêmicas, TVP, reinternação, reoperação e óbito ($p > 0,05$).
Conclusões: Tanto a aspirina como a rivaroxabana podem ser considerados úteis dentro das medicações disponíveis para a prevenção de TEV após ATJ.

Introduction

Total knee arthroplasty (TKA) is a very safe procedure.[1] However, patients undergoing this procedure are considered to be at risk of venous thromboembolism (VTE); deep vein thrombosis (DVT) and pulmonary embolism are the most common manifestations.[2] When preventive measures are not used, the incidence of DVT may reach 60% in the 90 days after surgery,[3] and the incidence of fatal pulmonary embolism may reach 1.5%.[4]

The guidelines of the American Association of Orthopedic Surgeons (AAOS) and the American College of Chest Physicians (ACCP) widely recommend the use of anticoagulants after TKA and total hip arthroplasty (THA). Although the AAOS guideline does not specifically recommend the use of aspirin, those of the ACCP strongly endorse its use (grade 1B – moderate quality evidence) as an effective agent in the prophylaxis of VTE after total arthroplasties.[2]

Currently, there is no consensus regarding the best pharmacological prevention; the most commonly used drugs have been enoxaparin, a low molecular weight heparin (LMWH), and rivaroxaban, a factor Xa inhibitor. Nonetheless, the effective VTE prophylaxis achieved is associated with an increased incidence of local postoperative complications (hematomas, superficial and deep infection) and systemic complications (nasal, gingival, and intracranial bleeding).[5–7]

The use of aspirin as an effective VTE prophylaxis after TKA and THA has been widely reported, but its routine use as a medication of choice remains controversial.[8] Recent studies have shown that aspirin is an effective agent in preventing VTE, with a lower risk of complications than other more aggressive anticoagulants, which can cause secretion in the surgical wound and bleeding, as well as high rates of rehospitalization, reoperation, periprosthetic infection, and even mortality.[9–11] Another benefit of aspirin cited in some recent studies is its cost-effectiveness when compared with LMWHs.[12] Therefore, the present study is aimed at comparing the efficacy and safety of aspirin and rivaroxaban in preventing VTE after TKA.

Methods

The study was conducted after approval by the institution's research ethics committee. All patients received and signed the informed Consent Form.

This was a prospective study. Thirty-two patients with osteoarthritis of the knee and indication of TKA for primary osteoarthrosis were selected. The exclusion criteria comprise patients allergic to one of the medications; those with coagulation disorders or liver diseases; those with history of bleeding; those in use of other anticoagulants; and those with a high or very high risk of developing thromboembolic events, such as those with obesity, very limited ambulation before surgery, a history of DVT or pulmonary thromboembolism (PTE), known hypercoagulative state (such as estrogen use), and history of recent malignant neoplasia.

TKA was performed by different surgeons after a rachidian space anesthetic block, using a tourniquet. A midline approach to the knee was used with a medial parapatellar arthrotomy, a femoral cut was made using an intramedullary guide, and a tibial cut was made with an extramedullary guide; the prosthesis was secured by conventional cementation technique. After surgery, a suction drain was installed and the layers and skin were sutured prior to tourniquet removal.

After surgery, the patients were randomized into two groups through a computer-generated table (Microsoft Office Excel 2010; Microsoft Corp., Redmond, Washington, United States). Drug prophylaxis with anticoagulants was initiated 12 h after the anesthetic block. In group A, patients received 300 mg aspirin divided into two daily doses of 150 mg each; in group B, patients received a daily dose of 10 mg of rivaroxaban. In both groups, patients used the same medication until completing 14 days of use, counted from the first dose.