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## Experience of Rivaroxaban Application for the Prevention of Thromboembolic Complications after Prosthetics of Large Joints

### ABSTRACT

The article presents an analysis of the rivaroxaban application after replacement of large joints held in the Republican Hospital №2, Yakutsk from January 2012 to December 2013. Studies have shown that rivaroxaban intake reduces the number of complications and increases the level of commitment in these patients.

**Keywords:** prevention of thromboembolic complications, rivaroxaban.

### INTRODUCTION

Venous thrombosis and pulmonary embolism are the most important medicine problem, which importance in the practice of doctors of various specialties cannot be overestimated [1, 3]. The problem of thromboembolic complications in traumatology is determined by considerable frequency of their occurrence, latent clinical course, the difficulty of treatment and high mortality. The relevance is due to the fact that one of the main areas of specialization - prosthetics is currently on the rise not only abroad, but also in our country. The percentage of total hip and knee joints to other operations conducted in the trauma hospitals is growing every year. With increasing numbers, the number of complications is growing, among of which a leading position are taking a thromboembolic complications. The frequency of symptomatic thromboembolic complications in total hip replacement on the background of thromboprophylaxis is, according to various estimates, from 1.3% to 3.4%, in total knee arthroplasty - from 1.7% to 2.8% [2]. Fatal thromboembolism frequency is ranging from 1% to 2.3%, nonfatal thrombosis develop in 7,9-15,2% cases [6]. When hip arthroplasty, median time to development of deep vein thrombosis is approximately 21 days prior to the development of pulmonary embolism - 34 days [7]. Numerous foreign clinical studies convincingly demonstrated that primary prevention of venous thromboembolism is highly effective and significantly reduces the incidence of deep vein thrombosis (DVT) and pulmonary embolism (PE) [5]. At the moment the use of rivaroxaban (Xarelto) is sufficiently studied for the prevention of DVT and PE among patients with trauma and orthopedic profile

[4]. Interest to rivaroxaban (Ksarelto) dictated by a number of its advantages over the known forms of injectable anticoagulants:

- Release tablet form, which eliminates the need for additional injection, especially at home after discharge from the hospital;
- Ease of reception - one tablet (10 mg) once a day;
- The lack of need for ongoing monitoring of blood coagulation parameters;
- High safety and tolerability, which is extremely important in the prevention of thrombosis after discharge from hospital;
- Absence of clinical trials, evidence of impaired liver function medicinal origin, associated with the use of the drug.

#### **MATERIAL AND METHOD OF RESEARCHES**

From January 2012 to December 2013 in the orthopedic department of the Republican Hospital №2 of Yakutsk, 665 operations on knee and hip joints concerning degenerative-dystrophic diseases were performed.

Age of patients ranged from 17 to 86 years. Average age was 57.62 years. There were dominated patients with knee arthroplasty (n-349). In both groups operation was performed under subarachnoid anesthesia.

After surgery, all patients received combined therapy with analgesics, anti-bacterial drugs. Given bed rest during the day after the operation, as well as limiting the axial load (walking with crutches to three months), we paid special attention to the prevention of postoperative thromboembolic complications. For this purpose, all patients underwent anticoagulation therapy and it was recommended elastic bandaging of both legs or wearing compression underwear for 6 weeks after surgery.

Patients were divided into 2 groups: the first group consisted of 136 patients, for the prevention of thromboembolic complications it was used nodraparina calcium (fraxiparine) 3800ME / 0.4 ml or 5700 IU / 0.6 ml, if body weight was 70 kg it was used nodraparina calcium with subsequent transition to antagonist potassium (warfarin) 5 mg once a day to control coagulation (bridges prevention).

The second group included 289 patients treated with rivaroxaban (Ksarelto) orally at a dose of 10 mg once a day (from the date of surgery up to remove the sutures, i.e. within 11-12 days) without monitoring indicators of blood clotting.

On average, the patients were in the hospital 11 days after surgery, after which they are discharged to ambulatory treatment, with detailed recommendations mandatory prevention of thromboembolic complications 10 days after knee replacement and 20 days after hip replacement in each group with appropriate medication. Also it was recommended INR control when receiving indirect anticoagulants (warfarin).

Initial visual inspection of patients was carried out one month after the operation: check the state of patients, found out real terms of anticoagulant prophylaxis on an outpatient basis, whether to hold control of coagulation (INR) when taking an indirect anticoagulant.

Repeated examinations conducted after three months and six, twelve months from the execution of the control radiographs.

### **THE RESULT OF RESEARCHES**

All patients had been warned about the risks and possible complications both during hospital stay and after discharge. Inspection was carried out in the trauma and orthopedic department in an outpatient surgery center of the Republican Hospital №2 or by telephone.

As a result, the control survey was conducted among 272 patients. According to the survey it was revealed that in the first group, prophylaxis of venous thromboembolism with recommended medicine continued 53 patients (60.22%), mostly women. From them, the control of coagulation was performed only 11 patients (12.5%). This is mainly due to the lack of laboratories in remote villages of the country, or the inability to go to the clinic for tests. The situation was different in the second group: from 184 patients prophylaxis of venous thromboembolism continued 167 patients, that amount 90.76%. The survey revealed that in the first group 3 patients replaced medicine to dabigatran etaksilat (pradaksa) 110 mg per day. 2 patients treated with indirect anticoagulants had epistaxis and 1 patient had clinical manifestations of venous thrombosis of the lower extremity. This patient Doppler has not been made. In the second group 2 patients were transferred to nadroparin calcium and 1 patient had manifestations of venous thrombosis (Doppler was not done). 3 patients had nosebleeds.

### **CONCLUSION**

According to the results of our survey it was revealed that the standard prevention of thromboembolism after total hip replacement of large joints when using rivaroxaban revealed bleeding events. In general, the rate of complications associated with the use of rivaroxaban was 1.8%, significantly lower than the figures of the first group (5.6%). Is also an

important indicator of commitment to anticoagulation, which in the first group was 60.22%, in the second group 90.76%. This is because rivaroxaban is convenient to use and does not require the control of blood clotting.

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