Krivoshchekov E.¹, Elshin E.², Romanov V.³

¹*Samara state medical University*

²*Samara city clinical hospital №8*

³*Territorial compulsory medical insurance Fund of the Samara region
Samara, Russia*

doi: 10.18411/spc-31-05-2017-15

idsp 000001:spc-31-05-2017-15

The results of complex treatment of patients after metatarsal resection concerning complications of diabetic foot syndrome

Abstract

In this article, the authors introduce the modern methods of treatment of patients after surgery for complications of diabetic foot. The proposed scheme purpose of pathogenetic drugs and technical support for the local treatment of wounds after performing a resection of the metatarsal on the foot. The analysis of results of treatment of patients with this pathology.

Key words: purulent-necrotic complications, diabetic foot, trombolitik, angioprotector, negative pressure therapy.

Relevance. The rationale is that septic surgery department deals with the problems of diabetic foot wound treatment after minor amputations. [1]. The length of diabetic foot complication progression depends to a large extent on the action of heparinase of nonclostridial anaerobic bacteria. Abnormal thrombosis in the microvasculature, reduction in blood viscosity, decrease in peripheral circulation causes the purulonecrotic process progression, extention on foot and necrosis formation. [2]. Besides incomplete and delayed removal of wound exudate results in slowing down of wound healing. [3].

Goal of research. We have tried to influence the given pathogenesis mechanisms in treatment of diabetic foot wound using urokinase and sulodexide

(Vessel Due F) in the early postoperative period along with topical treatment by the Vivano negative pressure device (Hartmann company, Germany) for patients who underwent metatarsal resection because of the complications of diabetic foot syndrome.

Materials and methods. The research is comparative in nature. It included 66 patients with type 2 diabetes mellitus after a metatarsal resection because of purulonecrotic complications of diabetic foot syndrome. [4].

All patients with non-insulin-dependent (type 2) diabetes mellitus have been taking tableted hypoglycemic agents for more than 5 years - on average - 7.8 years. The average age of the patients was 60.2 ± 2.8 years. 88% of them were women. Time duration from the manifestation of purulonecrotic complications of diabetic foot was 10.8 days.

Patients were divided into two groups. In group 1 (33 people) patients received standard treatment including antibiotics. [5]. In group 2 (33 patients) along with disease-modifying drugs, a course of urokinase and sulodexide (Vessel Due F) was given, and the wound was treated topically using the Vivano negative pressure device.

Urokinase treatment included 500,000 units intravenously per 100 ml of physiological saline daily. [6].

Vessel Due F was injected intravenously by drop infusion (600 units of activity per 100 ml of physiological saline) daily. The course of treatment was 5 intravenous infusion. [7].

The method of using the device Vivano, was as following: after metatarsal resection and careful necrectomy the wound of the foot was covered with a sterile sponge and it was sealed with adhesive film dressing. Vivano aspirator port was attached to the hole cut in the adhesive film dressing. The device produced 100 mm Hg pressure around the clock. The course of treatment lasted 5 - 7 days. [8].

Results. Results and treatment effectiveness were estimated according to cytogram changes of pre-and-post treatment. Cytological examination of wounds was done on day 5 and 10 after resection of the foot. Patient symptoms were also assessed.

At the end of the treatment 33 patients (100%) in group 2 had pain syndrome relief, decreased sensation of heaviness in the feet and disappearance of swelling. In group 1 the symptoms were much longer.

At the end of the treatment the inflammatory cytogram type in group 1 decreased only by 10.7 1.4%, in group 2 - by 89.6 1.3%. Inflammatory and degenerative

cytogram type in group 1 decreased by 10.8 1.2%, while in group 2 - decreased by 88.4 1.2%. On day 10 from start of treatment regenerative cytogram type was observed only in 8 patients (24,2%) in group 1 and in 29 patients (87,8%) in group 2.

Persistent transition to the second phase in wound healing was observed on day 21 (on the average) in group 1, and on day 12 in group 2. [9].

The number of repeated debridement in group1 was 2.9 (on the average), and in group 2 there were no at all.

There were no bleeding wounds to be treated after using of urokinase and Vessel Due F. There were no cases of removing Vivano device in group 2. [10].

Conclusion. Thus, described treatment of diabetic foot wounds after minor amputations shows efficiency and tolerability. Combined use of urokinase and Vessel Due F along with topical wound treatment using the Vivano negative pressure device in the complex treatment of diabetic foot wounds after minor amputations shows patient health improvements, positive dynamics in wound healing, no complications in the postoperative period. The treatment results in significant improvement in outcome for patients and reduces the length of hospital stay.

1. Lipsky BA, Berendt AR, Cornia PB. Infectious Diseases Society of America clinical practice guideline for the diagnosis and treatment of diabetic foot infections. // Clin Infect Dis. 2012, 54(12). p.132-173.
2. Krivoshchekov E. P., Boklin, A. A., Elshin, E. B., Dmitrieva I. A. Complex treatment of patients with purulent-necrotic forms of diabetic foot syndrome. // Fundamental research. 2015 №1(5). Samara. 2015, 1079 p., pp.975-979. (in Russian).
3. Sergeev, V. A.. Application of remedial technologies in patients with purulent-necrotic complications of diabetic foot syndrome. // Materials of the VII all-Russian scientific-practical conference. Topical issues of diagnosis, treatment and prevention of diabetic foot syndrome. Kazan. 2015. 170 p., pp.72 -78. (in Russian).
4. Krivoshchekov E. P., Elshin E. B., Romanov V. E. Post-operative therapy of complications of the diabetic foot. // International scientific journal "United-Journal", No. 3 / 2017. Tallinn, Estonia. 2017. 73 p., pp. 6-10.
5. Safarov S. Yu., Aliev M. A., Rabadanova R. S., Magomedov M., Osmanov R. S., Safarov R. S. Treatment of diabetic foot complicated by sepsis. // Almanac of the Institute of surgery named. A. V. Vishnevsky. 2017. No. 1. Moscow. 1554p., pp. 2021-2027. (in Russian).
6. Krivoshchekov E. P., Elshin E. B. Thrombolytic therapy in combination with correction after angiosurgical treatment of complications of diabetic foot syndrome. // Materials of V International medical scientific-practical forum. Angiology: innovative technologies in diagnostics and treatment of diseases of the blood vessels and heart. Interventional cardiology. Chelyabinsk. 2016. 270 p. pp 142-143. (in Russian).
7. Elshin E. B. Modern approaches to the treatment of purulent-necrotic lesions of the foot in diabetes. // Aspirancy Bulletin of the Volga region. Surgery. 2014, №5-6. Samara. 2014. 162 p., pp. 88-91.
8. Armstrong DG, Marston WA, Reyzelman AM, Kirstner RS. Comparative effectiveness of mechanically and electrically powered negative pressure wound therapy devices: a multicenter randomized controlled trial. Wound Rep Regen. 2012, 20(3). - p.332- 341.
9. Risan, B. V., Ivanov G. G. Methods of assessment of the wound process in patients with purulent-necrotic complications of diabetic foot syndrome. // Materials international scientific-practical conference. Surgical infections of skin and soft tissues in children and adults. Simferopol. 2017. 324 p., pp. 198-199. (in Russian).
10. Krivoshchekov E. P., Elshin E. B. Peculiarities of treatment of patients with purulent complications of diabetic foot syndrome by the method of combination of vacuum aspiration and fibrinolytic therapy. // Abstracts of the National surgical Congress in conjunction with the twentieth anniversary Congress of RSES. Moscow. 2017. 1554 p., pp. 353-355. (in Russian).