

Case analysis report of finding severe diabetic foot gangrene after XiShiQing method treating kidney transplantation

Yong-cheng Xu; Cheng Zhao; Ye-ming Cao*

***Corresponding Author: Ye-ming Cao**

Department of Vascular Disease, Shanghai Hospital of Integrated Chinese and Western Medicine, Shanghai, China.

Email: dr-cao@163.com

Introduction

Diabetes mellitus is a disorder of sugar metabolism, which has become one of the main diseases endangering human health. Due to the special pathological characteristics of diabetes (microcirculation disturbance and immune damage etc.). Compared with other people, these patients have a greater risk of renal damage and foot ulcer or gangrene [1]. Immunity levels tended to be low (long-term use of anti-rejection drugs and immunosuppressants) for diabetic patients after renal transplantation. The drugs not only can fight rejection, but also inhibit the patient's own immune system, so it is difficult to control the infection in patients. In addition, sugar foot necrosis develops very fast and the long-term high blood glucose in blood vessels, immune and nerve damage, which greatly increase or aggravate the chances of infection [2,3,5]. Due to the low immunity of these patients, resulting repeated infections frequently, and severe patients may quickly deteriorate and develop pus or sepsis, thus leading to life crisis, and treatment is quite tricky [1]. According to literature reports [3-5], kidney transplant patients with diabetes are 75% more likely to develop foot infections, among which 58.3% of the patients will develop into deep soft tissue infection and osteomyelitis. About 50% of the patients will eventually need amputation, 16.6% need to have forefoot amputation, and 25% need to have knee amputation. The author has admitted many patients with severe necrosis of diabetic foot complicated by kidney transplantation, from which he has also accumulated some experience in the treatment of these patients during the period of working in the national Vascular treatment Center in recent years. There are several analyzed and introduced cases:

Case Report 1

A 46 years old man was admitted to hospital with black necrosis of the right foot that had been progressing for half a month». The patient developed swelling of the right foot accompanied by shallow ulce-

ration and bleeding of the third toe after sprain by accident half a month ago, so he went to the outpatient department of an external hospital and was also treated with local simple dressing change. Subsequently, the ulceration and necrosis of the toe expanded to the back and sole of the foot, stench, discharge of pus and severe pain accompanied by high fever with a temperature up to 38.8°C a few days later. Finally, the patient was admitted to our department with severe gangrene of diabetic foot and right foot.

The patient's medical history included 14 years of diabetes generally controlled with insulin. He also had an over 5 years history of coronary heart disease and atrial fibrillation and treated with irregular oral aspirin enteric-coated tablet. In addition, he had more than 4 years history of diabetic nephropathy. In April 2018, Kidney transplantation was underwent in an external hospital and took a large amount of immunosuppressive agents and hormones (cyclosporine, prednisone, and McCoronate sodium tablets) orally for a long time after surgery.

Blood test showed leukocyte of $19.5 \times 10^9/L \uparrow$, neutrophil ratio of 92.4% \uparrow , hemoglobin of 92 g/L \downarrow , c-reactive protein of 126 mg/L \uparrow , renal function (creatinine of 149 $\mu\text{mol/L}$), glomerular (filtration rate of 68%).

Treatment Difficulties and Experience

This patient underwent renal transplantation one year ago, we have realized that affected food of patient had several characteristic of poorly infection control, high fever, rapid spread of necrosis to the ankle and calf was and high amputation, due to toe trauma patients shallow ulceration, long-term oral immunosuppressants and hormones and autoimmune suppression. We performed emergency decompression



Figure 1: Postoperative photos on the third day of admission: Applying XiShiQieFuQingJing method and timely cut and decompress to discharge pus, long - term nibbling debridement later .



Figure 2: The photo of re-debridement a week after admission: The abscess cavity of the ankle segment was incised and the necrotic tendon fascia tissue was debrided.



Figure 3: Photo of the third week of admission: Chinese medicine for internal and external use to promote the rapid growth of granulation



Figure 4: Photo of the fourth week of admission: The wound was closed with negative pressure suction drainage after removal of necrotic bone



Figure 5: The negative pressure device was removed at the fifth week of admission: It obviously show that the granulation grew ruddy and the secretion exudated less. Then the patient was debrided by traditional Chinese medicine.



Figure 6: The wound was basically healed 8 weeks after admission.



Figure 7:



Figure 8: Postoperative photos on the second day of admission: Apply XiShiQieFuQingJing method and Timely incision decompression discharge pus.

by opening the abscess cavity after being admitted to the hospital, besides, considering the protection of the transplanted kidney appropriately and only gave sensitive low-dose antibiotics for the symptoms.

Meanwhile, traditional chinese medicine is taken internally and externally together under the guidance of XiShiQing theoretical method. Raw rhubarb, gypsum, downbasin grass, buffalo horn, forsythia (clear dampness-heat detoxification) should be included in internal prescription, while raw and ripe ground, cassia twigs, cornus officinalis meat, wolfberry, Sichuan achycarpa, turtle plate (protect the kidney and nourish kidney Yin), which can eliminate moist-heat detoxification and protected the kidney Yin. Jiuyidan and Shengji powder were used into external use, wound negative pressure VSD suction was used to promote the final closure in the later stage, finally, limb preservation was successful! However, the defect of this case was due to the deep plantar necrosis to ankle and calf, plantar during treatment in a varus state for a long time, while lacked the protection of the lateral ankle ligament in the early stage, which lead to the late strephenopodia that influence its function. The patient went to the foot and ankle surgery department for cosmetic treatment after discharge with a less effective. We realized that the patient is a foreign enterprise executives and also went to the United States to have ankle amputation for the sake of business image by contacting with us later. He retained basically the basic leg and equipped with prosthetics. At same time, the deficiency of this aspect also reminds us to do a good job in protecting several major ligaments and joints of patients and prevent patients who protect limb successfully are still unable to walk and carry weight.

Case Report 2

A 62 years old man was admitted to our hospital with right foot ulceration and blackness and necrosis that had been for a week». The patient had a more than 5 years history of arteriosclerosis obliterans of lower limbs and only could intermittent claudication of about 100 meters. Besides, his body temperature

was found to rise to 39.9°C without obvious inductions about a week ago, so he was treated in the nephrology department of a local hospital in Zhejiang, and received anti-infection treatment.

The patient's medical history included more than 7 years of diabetes poorly controlled with insulin. He also had a more than 6 years history of hypertension and was treated 30 mg qn of Baixintong orally. In addition, he underwent «kidney transplantation» in Beijing 301 Hospital for uremia four years ago with successful operation, for which Long-term oral prednisone 10 mg qd., Miv 2 capsules bid and Procofu 2 capsules bid were used to fight rejection.

Black necrosis of the affected foot gradually spreads to the ankle, pain and a large amount of purulent foul discharge exudates. Moreover, the department of Orthopedics of the external hospital refused to perform amputation on the kidney transplant patient with the risks associated with renal transplant patients, so the patient came to our department for treatment. Subsequently, in order to seek further treatment, and considering that the infected and necrotic foot was still serious in the outpatient department, the patient was admitted to our department for diabetic foot gangrene necrosis of right foot with infection. Blood test showed white blood cells of $20.5 \times 10^9/L \uparrow$, neutrophil ratio of 92.0% \uparrow , hemoglobin of 89 g/L \downarrow , platelet of $435 \times 10^9/L \uparrow$, renal function (creatinine of 161 $\mu\text{mol/L}$), glomerular (filtration rate of 62%).

Admission photos: Patient's left foot was black and spread to ankle.

Treatment difficulties and experience

Patients who have kidney transplantation a year later, necrosis of affected foot is developing rapidly for long-term oral immune inhibitor, besides, the spread of infection to ankle segment affected the tibia fibular head. Therefore, we carefully choose the sensitive antibiotics and dose (try not to affect the kidney), TCM syndrome differentiation and treatment and Chinese medicine were used for more than two months under the application of XiShiQing method theory, among which raw rhubarb, gypsum, sedum sarmentosum, buffalo horn, forsythia (clear dampness-heat detoxification) were included in prescription, raw and ripe ground, cassia twigs, Cornus officinalis meat, wolfberry, radix oxisobu, turtle plate (protect the kidney and nourish the kidney Yin), which can eliminate dampness-heat detoxification and protect kidney and Yin. In terms of external use, Jiuyidan and Laodi paste were used for dressing change and debridement for nearly a month and Shengji powder could promote granulation growth, In addition, we used the osteoekerke's needle for residual joint bone implant bone fusion joint fixation by multidisciplinary cooperation later. Moreover, we also fully absorbed the experience of last case for this patient, which not only did protect the inner lateral ligament, but also avoid inside and outside pronation of the affected foot. In addition, what most important was that came true successfully the foot residual bone joints fusion and a new mechanical support point of the foot was established. Therefore, the patient currently can walk slowly and daily life is basically self-care.



Figure 9: Photo of re-debridement after 10 days of admission: Removal of necrotic mass of bone exposed to tibial head



Figure 10: Photo after a month: Using XiShiHuaFu to perform Debridement and dressing change



Figure 11: Photo of debriding the joint with Kirschner wire fixation and fusion closure two months later



Figure 12: Photo of removing the Kirschner wire and closing the wound after two and a half months



Figure 13: Photos of patients' daily walking activities after discharge (1-year follow-up).



Figure 14: The wound was basically healed 8 weeks after admission

Discussion

The efficiency of refractory and multiple infectious ulcers of traditional Chinese medicine in the treatment of diabetic foot has received more attention [6,7]. Relevant studies have shown that the amputation rate of feet with severe diabetes mellitus treated by integrated Chinese and Western medicine is much lower than that by single use of traditional Chinese medicine or Western medicine [8]. The use of immunosuppressants and the damage of the immune function and blood vessels caused by hyperglycemia are the main reason of diabetic patients repeated infection after renal transplantation [9-11], while the infection is the direct reason of amputation [12]. Therefore, it is difficult to effectively control infection for renal transplant patients who kidney transplantation is associated with diabetes. However, necrosis of affected foot is developing rapidly, limb salvage is very difficult in clinical practice. Therefore, orthopedist often consider amputation, because they are afraid of stress reaction and then cause kidney damage or failure again. Moreover, large dose of hormone and immune preparation oral will affect incision closure. Besides, vascular surgeon are afraid of interventional treatment and large dose of contrast medium can affect the kidney function, which are main contradiction of patients' limb salvage treatment. Our department adopts the treatment plan of one body and multiple operations (XiShiQieFuQingJing method, nibbling debridement, wound negative pressure suction technique, bone joint fusion and fixation) based on XiShiQing method and TCM diagnosis and treatment technology by cooperating with multiple disciplines. Finally, doctors successfully achieve the three goals of life preservation, kidney preservation and limb preservation, which fully shows that Chinese and western combined therapy may be one of the effective measures of limb preservation therapy for complex sugar foot. We hope to further study its internal mechanism in the future, and explore the unique efficacy of TCM in anti-infection and protection of renal function, so it will benefit more patients.

References

1. Bandyk DF. The diabetic foot: Pathophysiology, evaluation, and treatment. *Semin Vasc Surg.* 2018; (2-4): 43-48.
2. Larsen J, Lane J, Mack-Shipman L. Pancreas and kidney transplantation. *Curr Diab Rep.* 2002; 2: 359-364.
3. Van de Velde-Kossmann KM. Recognizing Common Skin and Soft Tissue Infections in the Nephrology Clinic. *Blood Purif.* 2019; 47: 259-264.
4. Misra AK, Baxi M, Agarwal A. Post-renal transplant diabetic foot lesions Do they need to be treated differently?. *Journal of Diabetes and Its Complications.* 2001.
5. Sharma A, Vas P, Cohen S, Patel T, Thomas S, et al. Clinical features and burden of new onset diabetic foot ulcers post simultaneous pancreas kidney transplantation and kidney only transplantation. *J Diabetes Complications.* 2019; 33: 662-667.
6. Huang YY, Jiang M, Zhang C, Wang Z, He D, et al. Benefits of Chinese Medicine Among Patients with Diabetic Foot: An Expert Review from Clinical Studies. *Curr Vasc Pharmacol.* 2015; 13: 520-525.
7. Zhang Y, Yuan H, Kang J, Xie H, Long X, et al. Clinical study for external washing by traditional Chinese medicine in the treatment of multiple infectious wounds of diabetic foot: Study protocol clinical trial (SPIRIT compliant). *Medicine (Baltimore).* 2020; 99: e19841.
8. Hu CX, Chang B, Bao JW, Li YP, Zhang GY. Severe diabetic foot treatment by integrated medicine, reports of 330 cases. *Chinese Journal of Surgery of Integrated Traditional and Western Medicine.* 2004; 10: 140-142.

9. Peleg AY, Weerathna T, McCarthy JS, Davis TME. Common infections in diabetes: pathogenesis, management and relationship to glycaemic control. *Diabetes Metab Res Rev.* 2007; 23: 3-13.
10. Sułowicz J, Wojas-Pelc A, Kuźniewski M, Ignacak E, Janda K. Cutaneous viral infections in patients after kidney transplantation: risk factors. *Pol Arch Med Wewn.* 2013; 123: 686-692.
11. Dicle O, Parmaksizoglu B, Gurkan A, Tuncer M, Demirbas A, et al. Skin infections in 401 renal transplant recipients in southern Turkey. *Exp Clin Transplant.* 2009; 7: 133-136.
12. Sen P, Demirdal T, Emir B. Meta-analysis of risk factors for amputation in diabetic foot infections. *Diabetes Metab Res Rev.* 2019; 35: e3165.

Manuscript Information: Received: November 14, 2022; Accepted: December 15, 2022; Published: December 20, 2022

Authors Information: Yong-cheng Xu; Cheng Zhao; Ye-ming Cao*

Department of Vascular Disease, Shanghai Hospital of Integrated Chinese and Western Medicine, Shanghai, China

Citation: Yong-cheng X, Cheng Z, Ye-ming C. Case analysis report of finding severe diabetic foot gangrene after Xishiqing method treating kidney transplantation. *Open J Clin Med Case Rep.* 2022; 1953.

Copy right statement: Content published in the journal follows Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>). © **Ye-ming C (2022)**

About the Journal: Open Journal of Clinical and Medical Case Reports is an international, open access, peer reviewed Journal focusing exclusively on case reports covering all areas of clinical & medical sciences.

Visit the journal website at www.jclinmedcasereports.com

For reprints and other information, contact info@jclinmedcasereports.com