

Insertion of the podiatrist and implementation of the diagnostic and therapeutic care path for the diabetic foot in the area of Cesena

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ABSTRACT

Advances in the treatment of diabetic disease have led to an increase in the life expectancy of diabetics. The main problems are related to chronic complications of both microangiopathic and macroangiopathic diabetes; in particular, the diabetic foot is assuming an important role, since it is estimated that 15% of diabetic patients will experience a lower limb ulcer in life. Furthermore, out of 100 diabetics, about 84 had a chronic ulcer aggravated over time as a cause of amputation. This work stems from the need to define a shared path in the AUSL of Cesena that provides for the prevention and treatment of the podiatry aspect of diabetic disease, based on the latest international guidelines. The Podiatrist, in fact, despite being a newly established professional figure, is a health worker who deals not only with diabetes but also with all the other diseases affecting the foot. In several Italian diabetological realities it is already in full swing, in Cesena despite being present since 2012, it has never been integrated into the diabetic foot diagnostic and therapeutic care path.

INTRODUCTION

The objective of this study is to show how the services and management of the diabetic foot can be implemented within the Diabetology and Endocrinology Operative Units thanks to the introduction of the podiatrist. After an initial careful review of the guidelines, a more effective and efficient treatment pathway was established that envisaged preventive and curative podiatric treatments for

patients at risk or in a pre- or post ulcerative phase. Furthermore, a connection network can be created in the territorial realities for integrated management. For a long time now the attention has been shifted not only to the treatment of complications but above all to prevention. This disease being multifactorial and chronic requires a specialized and motivated multidisciplinary team. The Scientific Societies have recommended creating specialist centers that are easy to access for the patient. The 1st level centers for prevention and 2nd and 3rd level for the treatment of acute pathology. In the AMD-SID Care Standards (2014) we find that all patients with diabetes mellitus, which present a high risk of ulceration, should be guaranteed a program that includes education, podiatric assistance and the choice of a primary prevention footwear (built with a biomechanical sole, without seams, with flexible upper and increased space for a plaster cast footbed) if the patient belongs to a risk class of 1 or 2. If the patient has already had an ulcerative lesion to the latter must be prescribed a secondary prevention footwear (made with semi-rigid or rigid biomechanical sole and internal plantar built on plaster cast) to reduce the risk of amputation.¹ The podiatrist is the health specialist who, through the screening of chronic complications in the lower limbs, is able to identify the ulcerative risk and after having identified the class of risk shares with the doctor the most appropriate therapeutic procedure and the necessary follow-up. In Emilia-Romagna it is estimated (according to data from the Diabetic Association, 2015) that 226 thousand people are affected by this disease (5%). Already in 1990, the objective of the Diabetological, European and American Scientific Societies (Resolution of Saint Vincent), was to halve the number of amputations of the lower limbs within a few years, through the creation of departments and clinics dedicated to the care of the di-

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abetic foot.²⁻⁴ Then in 1999 the International Diabetes Federation (IDF) and the WHO took into account the 1st International Consensus Document on the diagnosis and treatment of diabetic foot.² In the same year the Italian Standards for the Treatment of Diabetes was published Mellitus: in which the need to create a multidisciplinary approach was finally highlighted.¹ These Scientific Societies have defined concrete paths to be able to build 1st level specialist centers for prevention, 2nd and 3rd level for the care where make patients fit. Specifically, the 2nd level structure must ensure diagnosis and treatment of acute pathology, while the 3rd level structure must guarantee surgical procedures such as distal revascularization, bypass or percutaneous trans luminal angioplasty as well as surgery both urgency rather than election. Numerous studies have shown that the rate of amputations of the lower limbs can be significantly reduced if appropriate prevention strategies are applied such as: examination of the foot by the doctor at least once a year in unsafe diabetics and at least every 6 months in those at risk, even in the absence of painful symptoms.⁵⁻⁹ For diabetic patients it is essential to identify the risk class based on the history of previous ulcers or amputations, reduced social status, lack of health education, lower limb neuropathy, vasculopathy of the lower limbs, foot deformity with the appearance of keratosis, bony prominences and unsuitable footwear. The fundamental role is played by health education, which must be implemented automatically and aimed at both health professionals and patients, but above all caregivers. This is the focal point from which to reduce complications; therefore the continuous training of the medical-podological team on the diabetic pathology is necessary to improve the quality of the treatment.

MATERIALS AND METHODS

In Emilia Romagna, at the end of the 1990s, a particular interest was developed for the assistance to patients with diabetes and in 2003 the *Clinical-organizational guidelines for the management of diabetes mellitus* were officially published. Projects were then started for integrated management of type II diabetes, with the aim of re-orienting the system of assistance to diabetic patients by developing professional integration between Diabetes Centers and General Practitioners. The clinic that deals with screening and dressings of the diabetic foot is located at the Service Plate of the Bufalini Hospital in Cesena. Here we manage the prevention and treatment of the diabetic foot as well as other conditions deriving from rheumatic, vascular, neurological and oncological diseases often concomitant to diabetic pathology. The activity of assistance to patients with diabetic foot is performed by the podiatrist flanked by the nurse with specific training in the assistance to patients with diabetic foot, coordinated in turn by the diabetes doctor.

The activities carried out are consistent with the internationally validated prevention hinges: objective examination of the foot and periodic inspection, risk identification, health education, advice/prescription of suitable footwear, treatment of pre-ulcerative lesions, orthotic or plant orthotics manufacturing advice and biomechanical functional evaluation with baropodometric platform and periodic podological checks.^{2,3,10}

RESULTS

The diagnostic and therapeutic care path (DTCP) recognizes two distinct phases: i) Prevention phase; ii) Phase of injury.

In the prevention phase, the patient is involved, at the various stages of the disease, at the general practitioner (GP)'s clinic, at the 1st level diabetes clinics widespread in the area and 2°.

In each of these levels are carried out: i) Basic *education* on the correct behaviors to avoid injuries, choice of appropriate footwear, on the signs, symptoms and risks of neuropathy and vasculopathy; ii) *prevention* through basic diagnostic tests (Monofilament, Diapason, ABI); iii) *observation* of the legs and feet to highlight deformities, dyschromia, nail hypertrophy, attitudes to be corrected and initial injuries often caused by improper footwear, inspection and palpation of the pedidium and tibial wrist.

These actions lead to the identification of those at risk, whose staging will take place using a computerized procedure that provides for three different levels of risk.^{9,10} The neurological evaluation required by the doctor includes, in addition to the basic evaluation, tests for autonomic neuropathy and any neurological examination with electromyography. Vascular evaluation will include the search for arterial pulses in the elective sites of repere, the survey of the ankle-arm index and when necessary the Vascular Surgeon will perform the non-invasive (Eco-Color-Doppler) and invasive (arteriography) examinations.

The bio-mechanical evaluation is based on the examination of the foot, on functional tests in which the analysis of the step, the kinematic stabilometry of joint movements and activation of certain muscular regions are evaluated. In the diabetic foot, due to motor neuropathy, there is a joint stiffness in the three planes that limits the transfer of rotations from the tibia to the foot with increased friction and increased pressure time on the metatarsal heads during the step. In addition, muscle atrophy reduces the strength of all muscle groups, in particular ankle extensors and flexors, resulting in functional deficits and increased risk of falls. Sensitive neuropathy causes the loss of proprioceptive afferents, with a consequent increase in the base of support and progressive dislocation of the plantar adipose pad. Unfortunately, there is a fibrotic process that causes the loss of the intrinsic

biomechanical characteristics of shock-absorber and consequent displacement of the load on the medial column of the foot (pronator syndrome). In the lesion phase, a typical cutaneous lesion can be seen by the GP, the emergency room, the diabetologist or the Vascular surgeon.

In any case, the patient will be taken care of by the Diabetic Foot Surgery and normally the diabetologist is the first to evaluate the lesion. Based on its severity, the presence of neuro and vasculopathic complications and / or infections and the state of the patient, will call into question the different levels of intervention, for coordinated and synergistic action.

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In clinical practice the health professional who deals with injuries must be based on the principles of Falanga's Wound Bed Preparation, cited in the main guidelines.^{8,9,11} It is a method that provides a complete approach to patient management, removing local barriers to healing and stimulating tissue repair processes. The opportune management of the exudate and the removal of the necrotic tissue are key points for the cellular response; the ulcer surface must not have tissues such as necrosis, debris or excessive secretions. Therefore cleaning should be done at each dressing change by applying appropriate methods and materials.

DISCUSSION

With the resolution of 7/25/2016, the Emilia Romagna region underlines the importance of using DTCP as complex interventions based on scientific evidence to improve care by ensuring greater integration between services. From the analysis of the data collected by the Italian Society of Diabetology, to date 20% of diabetic structures in Emilia Romagna do not use this tool that would reduce the variability of care improving its quality and efficiency.⁷ The podiatrist also in most of the analyzed structures is not used to perform foot dressings as it should be done by professional profile and guidelines.^{2,3,8-10} Post-training courses and

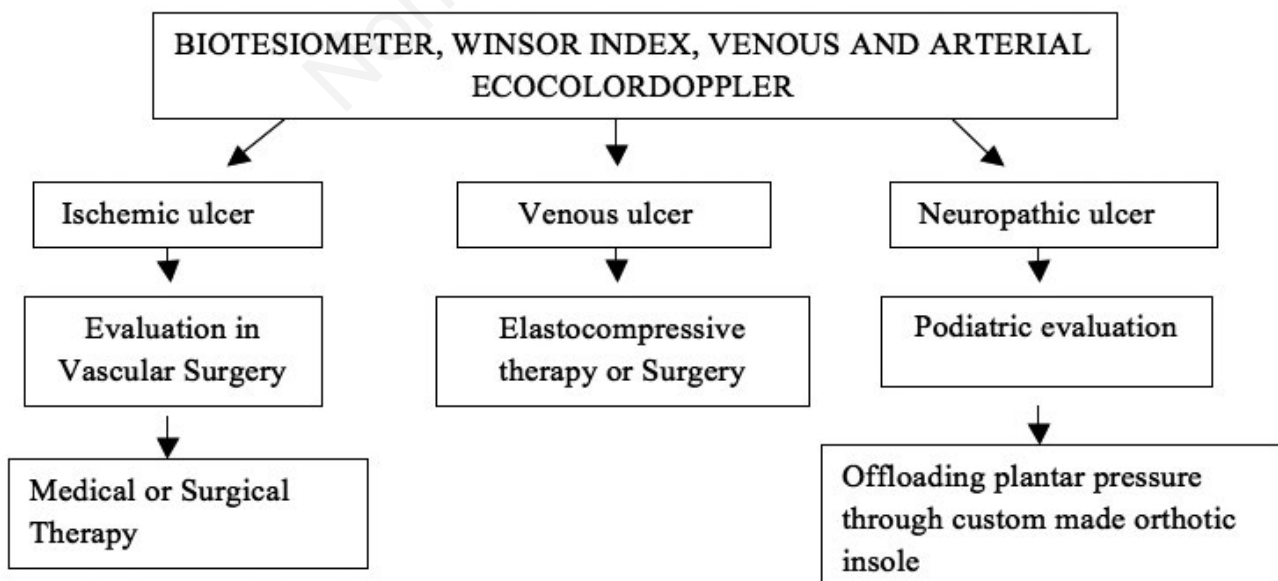


Figure 1. Evaluation of the type of ulcer in diagnostic and therapeutic care path.

a critical revision of DTCP must be the main engines for the podiatrist to have a greater impact on the multidisciplinary team, guaranteeing podiatric care to patients. One of the problem encountered in the Cesena area is the total working hours for the podiatrist (9 hours per week) as it is an activity founded by the diabetic association and this can not guarantee a high number of screening. Therefore compared to other diabetic centers not all patients are visited continuously.

tion and treatment of diabetic foot ulcers in the reality where, for 4 years now, I work alongside the diabetic doctor in the treatment and management of ulcerative diabetic foot lesions. After a review of the literature and on the basis of the main guidelines and in relation to the available resources, in Cesena thanks to the introduction of the podiatrist we were able to guarantee the patients the preventive and rehabilitative treatments necessary to reduce the incidence of complications and demolition surgical interventions, through follow-up visits to verify the adequacy of therapy, the prescription of orthoses for the prevention of relapses and an educational assistance program on the diabetic foot (Figure 3). I hope that in the future the hours dedicated to the treatment and prevention of the diabetic

CONCLUSIONS

The purpose of this work was to define a model of integrated and complete care management for the preven-

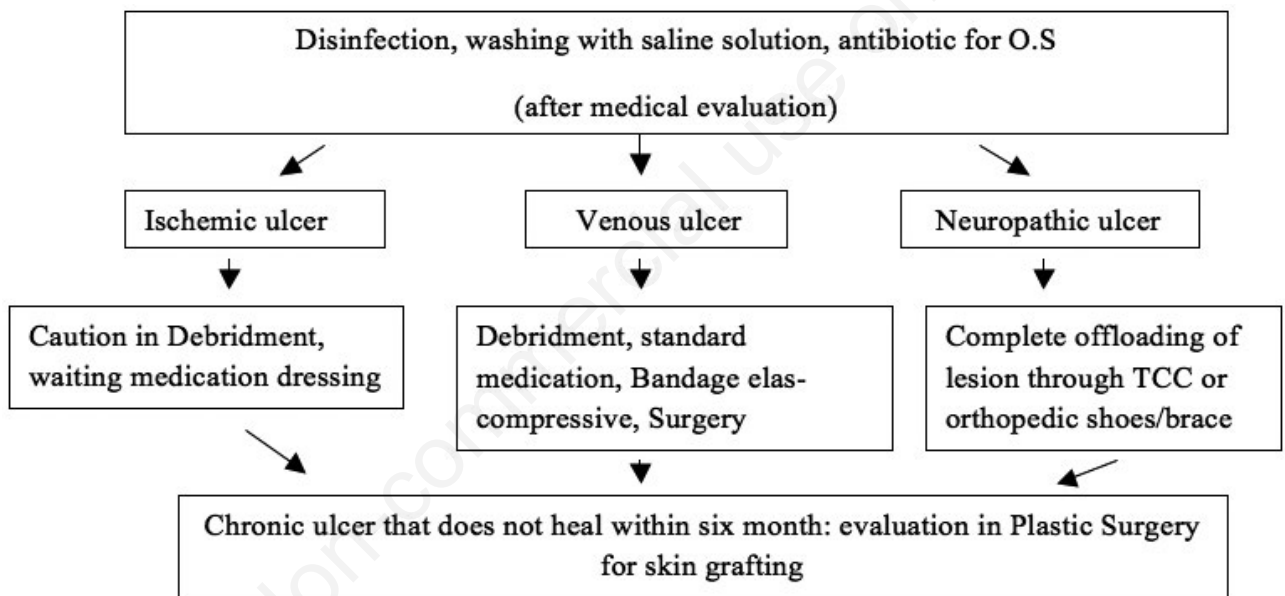


Figure 2. Treatment of diabetic ulcers.

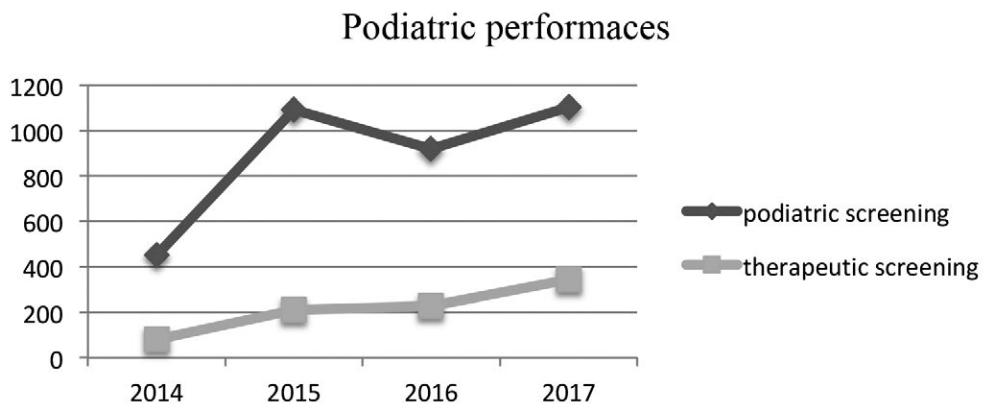


Figure 3. Overall diagnostic and therapeutic screening carried out from 2014 to 2017.

foot will be increased, and above all that all the diabetic centers in Italy will be able to include the figure of the podiatrist in the multidisciplinary team.

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