

Retrospective Study on Diabetic foot at Govt Thiruvarur Medical College, Thiruvarur.

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Abstract: Diabetic foot is one of the complications of diabetes, and is defined as a foot affected by ulceration that is associated with neuropathy and/or peripheral arterial disease of the lower limb in a patient with diabetes.

Background: Diabetic foot -Clinical symptoms, management and its prevalence

Methods: Wound Debridement with metabolic control, Revascularisation

Results: More common in males and the most common management method is Wound Debridement with metabolic control

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I. Objectives

To analyse the management methods and prevalence of Diabetic foot in March, April and May 2017.

II. Review of Literature

Diabetic foot is one of the complications of diabetes, and is defined as a foot affected by ulceration that is associated with neuropathy and/or peripheral arterial disease of the lower limb in a patient with diabetes.

Diabetic foot is characterized by a classical triad of neuropathy, ischemia, and infection.

Causes:

Diabetic foot ulcers result from the simultaneous actions of multiple contributing causes. The major underlying causes are noted to be peripheral neuropathy and ischemia from peripheral vascular disease.

Neuropathy

Neuropathy in diabetic patients is manifested in the motor, autonomic, and sensory components of the nervous system. Damage to the innervations of the intrinsic foot muscles leads to an imbalance between flexion and extension of the affected foot. This produces anatomic foot deformities that create abnormal bony prominences and pressure points, which gradually cause skin breakdown and ulceration.

Autonomic neuropathy leads to diminished sweating. The overlying skin becomes dry and increasingly susceptible to fissures and a subsequent development of infection.



The loss of sensation as a part of peripheral neuropathy exacerbates the development of ulcerations. As trauma occurs at the affected site, patients are unable to detect the insult to their lower extremities. As a result, many wounds go unnoticed and progressively worsen as the affected area is continuously subjected to repetitive pressure and shear forces from ambulation and weight bearing. Charcot arthropathy is a consequence of peripheral neuropathy. It is the result of a combination of motor, autonomic, and sensory neuropathies, in which there is muscle and joint laxity that leads to changes in the arches of the feet. Furthermore, the autonomic denervation leads to bone demineralization via the impairment of the vascular smooth muscle, which leads to an increase in blood flow to the bone with consequential osteolysis.

Peripheral vascular disease

Although atherosclerosis in patients with diabetes is similar to that seen in nondiabetics, it is generalized, occurs prematurely and progresses at an accelerated pace. Coronary artery, cerebrovascular, and peripheral vascular disease (PVD) are the predominant manifestations of macrovascular disease in diabetes. A majority of patients with PVD have associated coronary artery disease, however, the opposite is not true.

Peripheral vascular disease is found at all levels of the arterial tree but atheroma has an apparent predilection for certain sites, namely at bifurcations and bends in the artery, where hemodynamic shear stress is low or flow separation occurs. In the lower limb, the common sites are the aortoiliac segment and the superficial femoral artery (SFA) in the adductor canal. In diabetics, more distal vessels below the trifurcation such as the peroneal, anterior, and posterior tibials are commonly involved. Surprisingly foot vessels such as the dorsalis pedis are often spared.

Signs and symptoms:

Neuropathy

Worse at night

- Numbness or reduced ability to feel pain or temperature changes
- A tingling or burning sensation
- Sharp pains or cramps

Peripheral vascular disease

Characterized by loss of hair on the dorsum of the foot and a dependent rubor.

Management:

Diabetic foot should be managed using a multidisciplinary team approach.

Wound Debridement with metabolic control:

The management of diabetic foot ulcers includes several facets of care. Offloading and debridement are considered vital to the healing process, for diabetic foot wounds. The goal of offloading is to redistribute force from the ulcers sites and pressure points at risk, to a wider area of contact. There are multiple methods of pressure relief, including total contact casting, half shoes, removable cast walkers, wheelchairs, and crutches.



An open diabetic foot ulcer may require debridement if necrotic or unhealthy tissue is present. The debridement of the wound will include the removal of the surrounding callus, which decreases the pressure points at the callused sites on the foot. Additionally, the removal of unhealthy tissue can aid in removing colonizing bacteria in the wound. It will also facilitate the collection of appropriate specimens for culture and permit examination for the involvement of deep tissues in the ulceration.

Infection in a diabetic foot is limb threatening and at times life threatening, and therefore, must be treated aggressively. Superficial infections should be treated with debridement, oral antibiotics, and regular dressings. Deep infections are considered when the signs of infection are combined with evidence of involvement of deeper tissue structures such as bones, tendons or muscles. Although superficial infections are usually caused by gram-positive bacteria, the deep foot infections are invariably polymicrobial and caused by gram-positive bacteria, gram-negative bacteria, and anaerobes. All patients with deep infections should be hospitalized and started on broad-spectrum antibiotics. The choice of antibiotics initially should be empirical, but once the culture reports are known, it should be specific and narrowed down. Surgical debridement should be carried out, which should include all the devitalized tissues, sloughed tendons, and infected bones.

Multiple injections of insulin or continuous insulin infusion should be instituted to achieve metabolic control.

Revascularization

Patients with evident peripheral ischemia need revascularization as adequate arterial blood supply is necessary to facilitate wound healing and resolve the underlying infection.

Surgical bypass is a common method of treatment for ischemic limbs, and favourable long-term results have been reported. Up to a 90% 10-year limb salvage rate has been demonstrated with surgical bypass procedures of the lower extremity. In cases where there are multiple levels of occlusion, revascularization at each point is necessary to restore the arterial blood flow and increase the chance for limb salvage. Transluminal angioplasty of the iliac arteries in conjunction with a surgical bypass in the distal extremity may be implemented, and efficacy has been demonstrated in diabetic patients. Transluminal angioplasty is also an excellent option for single stenotic lesions.

For multiple lesions or occlusions > 15 cm or occlusion of infra-popliteal vessels, bypass surgery is the best option.

III. Methodology

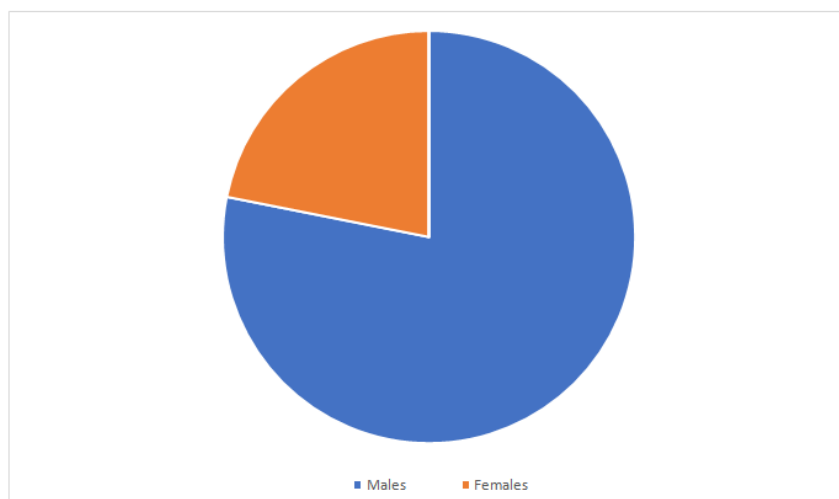
Study type: Retrospective study.

Sample size: 64 patients.

Study period: March, April and May 2017, at MS & FS ward, department of general surgery in Thiruvarur medical college hospital.

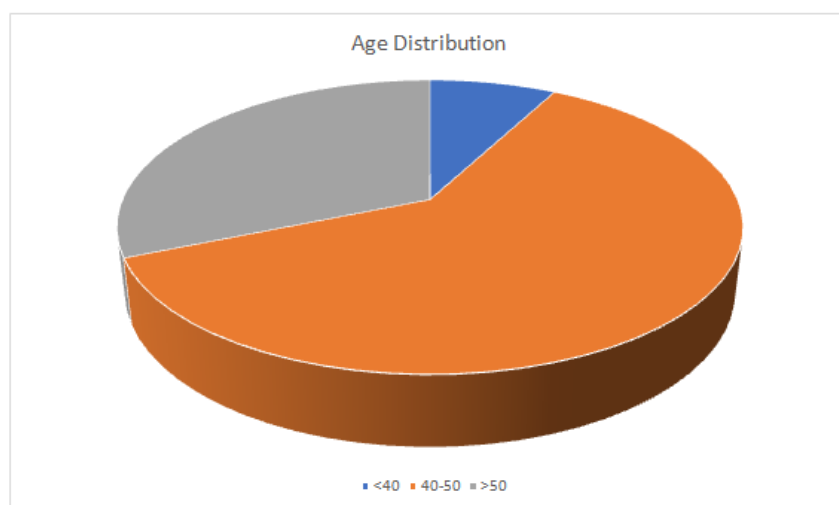
Sex distribution:

Male	Female
50	14

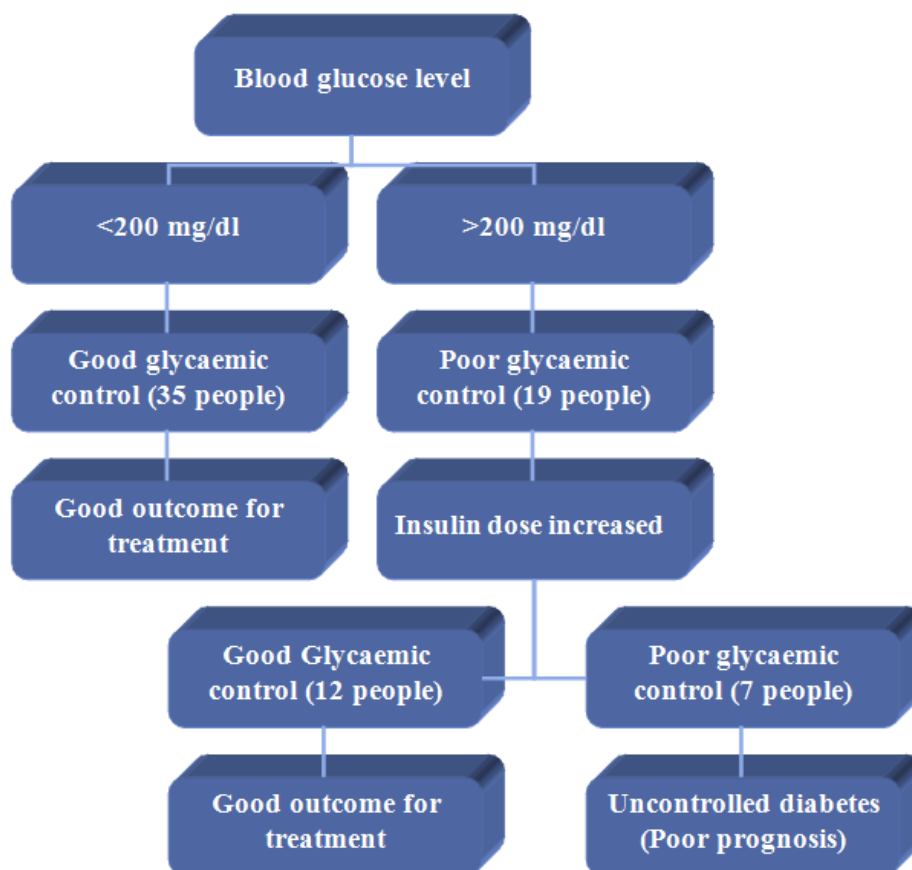


Age distribution:

<40	40-50	>50
5	39	20



Effect of Blood Glucose:



Management methods:

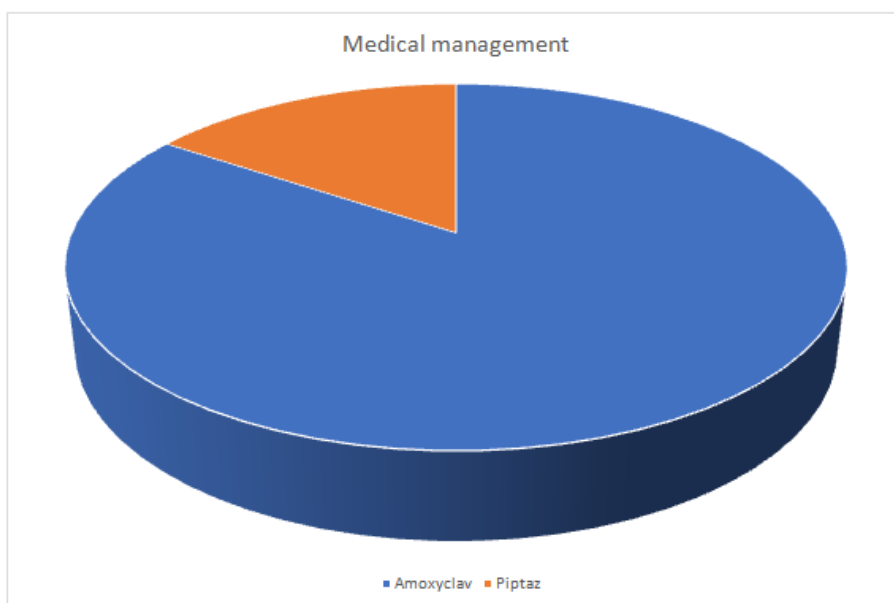
Medical Management:

Of 64 patient pus culture and sensitivity showed sensitivity piptaz, Imipenem, Amoxiclav

Mostly piperacillin and tazobactam (Piptaz) and amoxicillin & clavulanic acid (Amoxiclav) are used in medical line of management

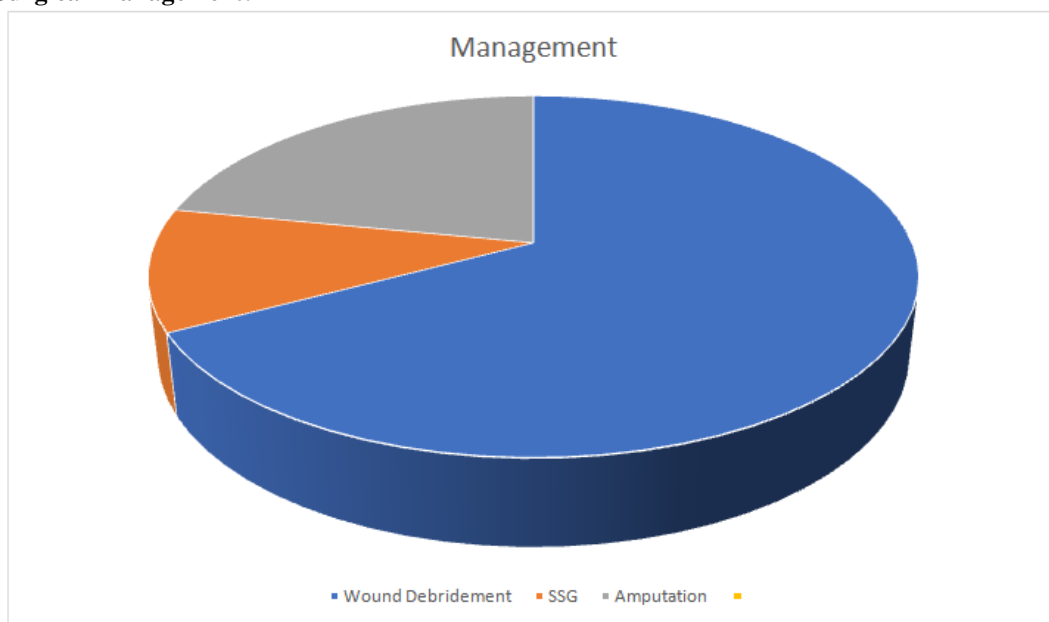
Amoxicillin & Clavulanic acid - 54

Piperacillin and tazobactam - 10



Patient on Piptaz had good & faster healing response compared to amoxiclav
 Of 54, 17 repeat Pus culture and sensitivity showed sensitivity to piptaz and resistance to amoxiclav

Surgical Management:



IV. Conclusion:

- Diabetic foot is more common in **Males in between 40-50 years** and most common management method used is **Wound Debridement with metabolic control**.
- Prognosis varies inversely with the blood sugar values. Patient with higher blood sugar values has poor prognosis and vice versa
- In about 67 % of patients, Wound debridement with medical management resulted in better wound healing.

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