

# ***DIABETIC FOOT ULCER***

## **DIABETIC FOOT**



- Diabetic foot ulcer is a major complication of diabetes mellitus and probably the major component of the diabetic foot.
- It occurs in 15percent of DM patients

# ***Risk factors***

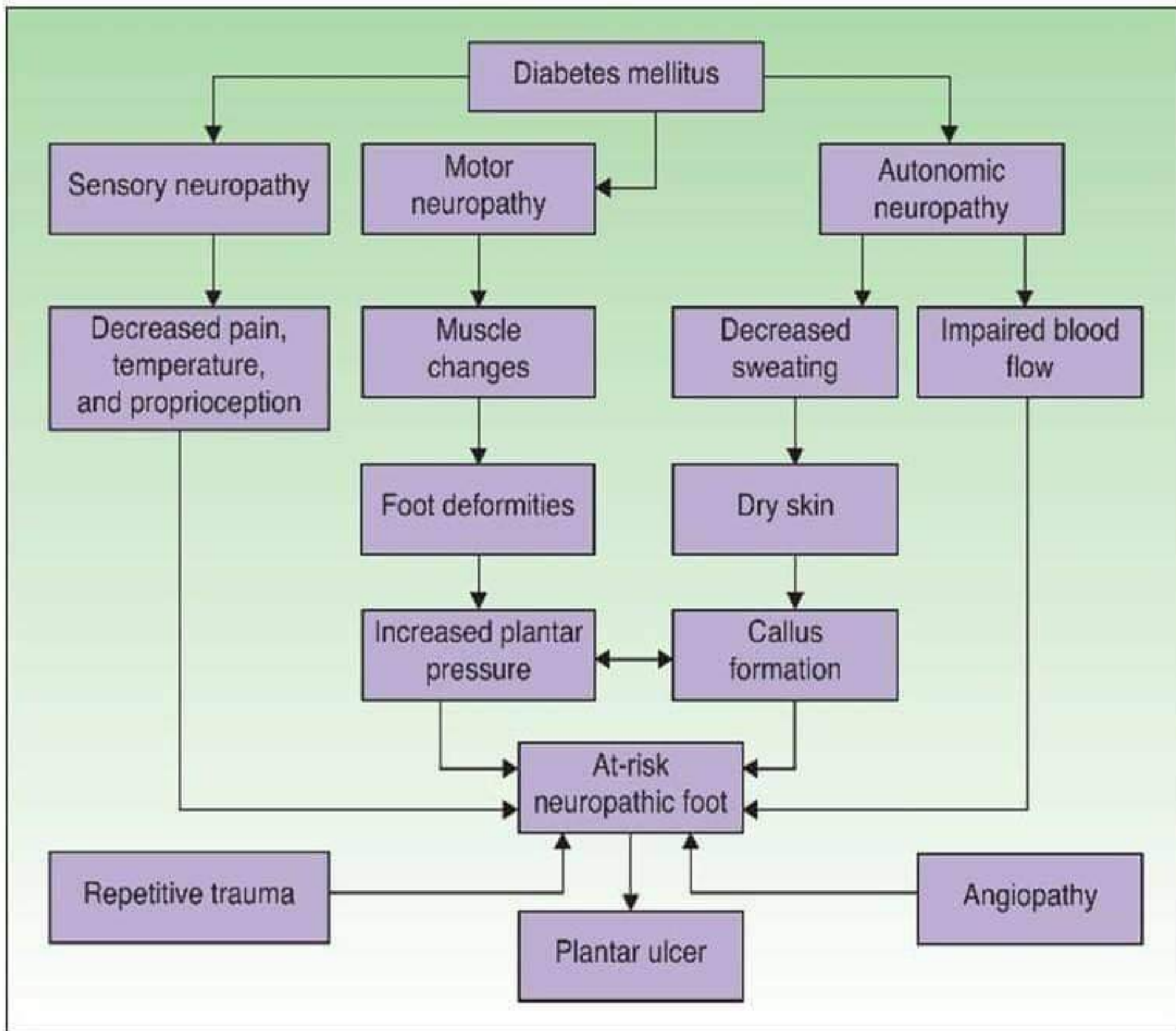
- Previous amputation
- Foot deformity
- Past history of foot ulcer
- Peripheral vascular disease
- Peripheral neuropathy
- Visual impairment
- Diabetic nephropathy
- Poor glycemic control
- Cigarette smoking

# ***Etiopathogenesis***

- As we all know, DM is one of the metabolic conditions that disturbs wound healing process.
- Many studies have shown a prolonged inflammatory phase in diabetic wounds, which causes a delay in the formation of mature granulation tissue and a parallel reduction in wound tensile strength

- Altered metabolism
- Impaired nitric oxide synthesis
- Structural and functional changes in fibroblasts
- Increased matrix metalloproteinase (MMP) activity





# ***Wagener's grading of diabetic foot ulcers***

Grade 0: Foot at risk (with evidence of neuropathy)

Grade 1: Superficial ulcer

Grade 2: Deep ulcer (involving skin, subcutaneous tissue and muscle, without osteomyelitis)

Grade 3: Deep ulcer with osteomyelitis

Grade 4: Foot gangrene (half of foot)

Grade 5: Whole foot gangrene

## Diabetic Foot Ulcer (DFU)

### Grade 0

- Preulcer stage
- Skin is intact
- Redness of skin
- Calluses
- Bony deformities

**It Can be prevented**

**It should be reassessed**

**Annually**





# Wagner Classification of DFU

## Grade 1

Superficial (shallow)  
Ulceration

Should be reassessed  
every 3 monthly



# Wagner Classification of DFU

## Grade 2

- Deep ulceration
- Visible  
Tendon,  
or bone in wound



Aggressive treatment is must

# Wagner Classification of DFU

## Grade 3

- Deep Abscesses
- Osteo Myelitis (Infection of Bone)

Chances of losing leg





# Wagner Classification of DFU

## Grade 4

Localized gangrene of toes /  
forefoot

Needs Amputation  
(Cutting) of Toe or  
part of foot





# Wagner Classification of DFU

## Grade 5

Gangrene of  
entire foot or leg

Needs  
Amputation  
(Cutting) of foot  
or leg



# ***Types of Diabetic Foot Ulcer***

- 1) Ischemic (from atherosclerosis, a macro vascular complication)
- 2) Neuropathic (from neuropathy, a micro vascular complication)

# ***Difference between neuropathic and ischemic DFU***

<b>Neuropathic Ulcer</b>	<b>Ischemic Ulcer</b>
Painless	Painful
Normal pulses	Absent pulses
Regular margins, typically punched-out appearance	Irregular margin
Often located on plantar surface of foot	Commonly located on toes, glabrous margins
Presence of calluses	Calluses absent or infrequent
Loss of sensation, reflexes, and vibration	Variable sensory findings
Increased in blood flow (atrioventricular shunting)	Decreased in blood flow
	Collapsed veins
Dilated veins	Cold foot
Dry, warm foot	No bony deformities
Bony deformities	Pale and cyanotic in appearance
Red or hyperemic in appearance	



# *Investigations*

- Random blood glucose level
- Wound swab m/c/s: infective organisms
- Wound histology : rule out malignancy
- X ray of the foot may show amputation, limb deformity, gas gangrene, osteomyelites.
- Doppler ultrasound to access blood flow
- CBC to rule out infection



# ***American Diabetes Association***

## ***principles of management of DFU***

- Offloading
- Debridement
- Wound dressing
- Broad spectrum antibiotics
- Revascularization
- Limited amputation
- Foot rehabilitation
- Good glycemic control using insulin, tetanus toxoid.

# ***Prevention (DM Foot care)***

- Good control of blood glucose
- Quit smoking
- Regular inspection of foot(using mirror to view plantar surface)
- Not to walk barefoot at anytime
- Avoid cutting finger nails with sharp instruments
- Avoid using too hot or too cold water on the foot
- Always keep the foot dry
- Avoid keeping legs on hot objects
- Don't remove calluses or lesions yourself
- Avoid tightening, high heel shoes or shoes that will expose the foot to injuries.

