Diabetes Complications- Foot disease and GI

AHLAM HAMDI DAHADHA

The diabetic foot

- The lifetime risk of a foot ulcer for diabetic patients (type 1 or 2) may be as high as 25 %.
- Highly preventable with proper evaluation and monitoring.
- Risk factors: previous foot ulceration, neuropathy (loss of protective sensation), foot deformity, and vascular disease.

Foot ulcers

- Neuropathy is present in over 80 percent of patients with foot ulcers.
- Promotes ulcer formation by decreasing pain sensation and perception of pressure, by causing muscle imbalance that can lead to anatomic deformities, and by impairing the microcirculation and the integrity of the skin.
- Once ulcers form, healing may be delayed or difficult to achieve, particularly if infection penetrates to deep tissues and bone and/or there is diminished local blood flow.

Evaluation of Diabetic foot

Dermatologic
Skin status: color, thickness, dryness, cracking
Sweating
Infection: check between toes for fungal infection
Ulceration
Calluses/blistering: hemorrhage into callus?
Musculoskeletal
Deformity, eg, claw toes, prominent metatarsal heads, Charcot joint
Muscle wasting (guttering between metatarsals)
Neurological assessment
Vascular assessment
Foot pulses

Foot care in Diabetes -ADA

- Perform a comprehensive foot evaluation annually to identify risk factors for ulcers & amputations.

- All DM patients should have their feet inspected at every visit.

- History should contain prior history of ulceration, amputation, Charcot foot, vascular surgery, smoking, retinopathy & renal disease; and should assess current symptoms of neuropathy and vascular disease.

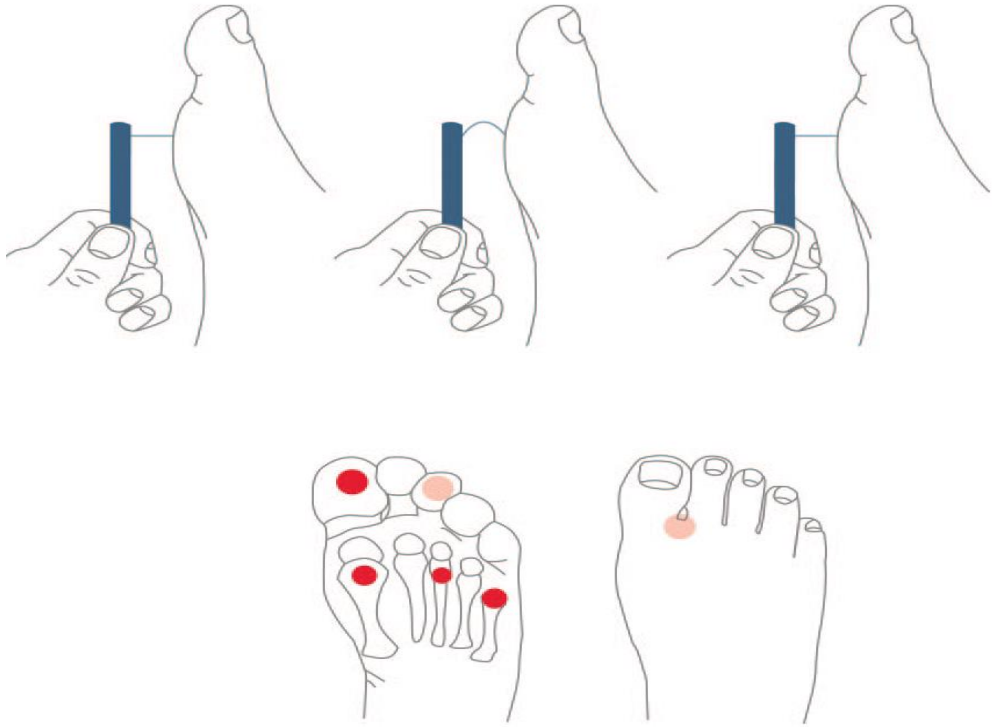
Foot care in Diabetes -ADA

- A multidisciplinary approach is recommended for individuals with foot ulcers and high-risk feet.
- The use of specialized therapeutic footwear is recommended for patients with high-risk feet.
- Provide general foot self-care education to all patients with diabetes.

Foot care in Diabetes –ADA

Examination of sensation.

→ 10-g monofilament test



DM and GIT

Diabetic autonomic neuropathy

- May involve the cardiovascular, genitourinary, and the neuroendocrine system as well as the upper and lower gastrointestinal tract.
- Abnormalities of gastrointestinal function in diabetics are thought to be related, at least in part, to autonomic neuropathy of the enteric nervous system (ENS).
- diabetics are more likely to experience gastrointestinal symptoms compared with controls.
- Poor glycemic control was an independent risk factor for upper gastrointestinal symptoms.

gastroesophageal reflux disease (GERD)

- May be caused by autonomic neuropathy with decreased lower esophageal sphincter (LES) pressure, impaired clearance function of the tubular esophagus, or delayed gastric emptying.

- In healthy subjects, marked hyperglycemia affect esophageal motility and the number of transient LES relaxations (TLESR) compared to euglycemia.

→ It is known that gastroesophageal reflux episodes are associated with TLESR in healthy subjects and in patients with GERD.

Gastroparesis

- Or Delayed gastric emptying.
- 20 to 40 % of DM patients, primarily those with long duration of DM I with other complications develop gastroparesis.
- Severe gastroparesis can contribute to poor control of blood glucose concentrations and be associated with aspiration of gastric contents.
- Several factors may contribute to erratic glucose control in gastroparesis, such as **variability in food and carbohydrate absorption**.
- In turn, a variable glycemic state may further worsen the gastroparesis.
- Gastroparesis may also impair absorption of oral hypoglycemic drugs

Gastroparesis-Diagnosis

- Diabetic gastroparesis is usually suspected on clinical grounds by the combination of symptoms or findings or unexplained poor glycemic control despite strong therapeutic efforts.
- Clinical symptoms that suggest gastroparesis include early satiety, nausea, vomiting, bloating, and postprandial abdominal fullness.
- The presence of residual food in the stomach after an overnight fast during upper gastrointestinal endoscopy supports the diagnosis

Gastroparesis- Treatment

- Treatment should be directed toward alleviating symptoms.

- The management of this problem has four components:
  - ✓Supportive measures (eg, hydration and nutrition)
  - ✓Optimizing glycemic control in patients with diabetes mellitus
  - ✓Medications
  - ✓Occasional surgical therapy

Gastroparesis- Treatment

- A low-fat diet (without nondigestible fiber) and frequent, small meals.
- Enteral nutrition via a jejunostomy tube may occasionally be required.
- Parenteral nutrition should be restricted to patients with severe gastric and small intestine dysmotility in whom enteral feeding becomes impossible.

Gastroparesis- Treatment

- **Hydration and nutrition** —

- The recurrent vomiting and reduced oral intake associated with delayed gastric emptying may result in hypokalemia, metabolic alkalosis, dehydration, and deterioration in the control of diabetes mellitus.

- Supplementation of fluids, electrolytes, and nutrients should be achieved by the simplest, least invasive method.

- Liquidized or homogenized meals and liquid supplements.

- Administration of an antiemetic by suppository or parenteral route may facilitate oral feeding in selected cases.

Gastroparesis- Treatment

Jejunal feeding tube —

- If oral supplementation is unsuccessful.

- The feeding tube provides a means to deliver liquid nutrients beyond the stomach at rates that allow the majority of calories and nutrients to be delivered by continuous infusion at night.

- Some considerations include the caloric density and osmolality of the formula, and the concomitant presence of small intestinal disease,

Gastroparesis- Treatment

Parenteral nutrition —

- Seldom necessary in patients with gastric stasis unless it is part of a generalized motility disorder.

- Patients with severe dilatation or diffuse myopathic processes may fail other methods of nutritional support and pharmacotherapy.

- Parenteral nutrition restores a normal nutritional state in these patients

DIABETIC ENTEROPATHY

- Diarrhea and rarely steatorrhea can occur in diabetics, particularly those with advanced disease.
- The prevalence of diabetic diarrhea has been estimated to vary between 8 and 22 %.

DIABETIC ENTEROPATHY

- **Treatment** — Initial therapy should focus on correction of water and electrolyte imbalances, tight control of blood glucose, and restoration of possible nutritional deficiencies.
- Chronic treatment should be directed at the identified main cause of diabetic enteropathy rather than unspecific treatment on empirical grounds.
- e.g. Patients with bacterial overgrowth should be treated with antibiotics
- For accelerated intestinal transit, a trial with antidiarrheal agents such as loperamide