

Diabetic Autonomic Neuropathy

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Definition

- Symptoms and/or signs of peripheral nerve dysfunction in people with diabetes **before / after the exclusion of other causes**
- DAN is an **underestimated / overestimated** complication of DM
- Affects **one organ / multiple organs**
- Leads to **increased / decreased / no change** in mortality and morbidity
- **Always symptomatic / can be asymptomatic**

Cardiovascular Autonomic Neuropathy

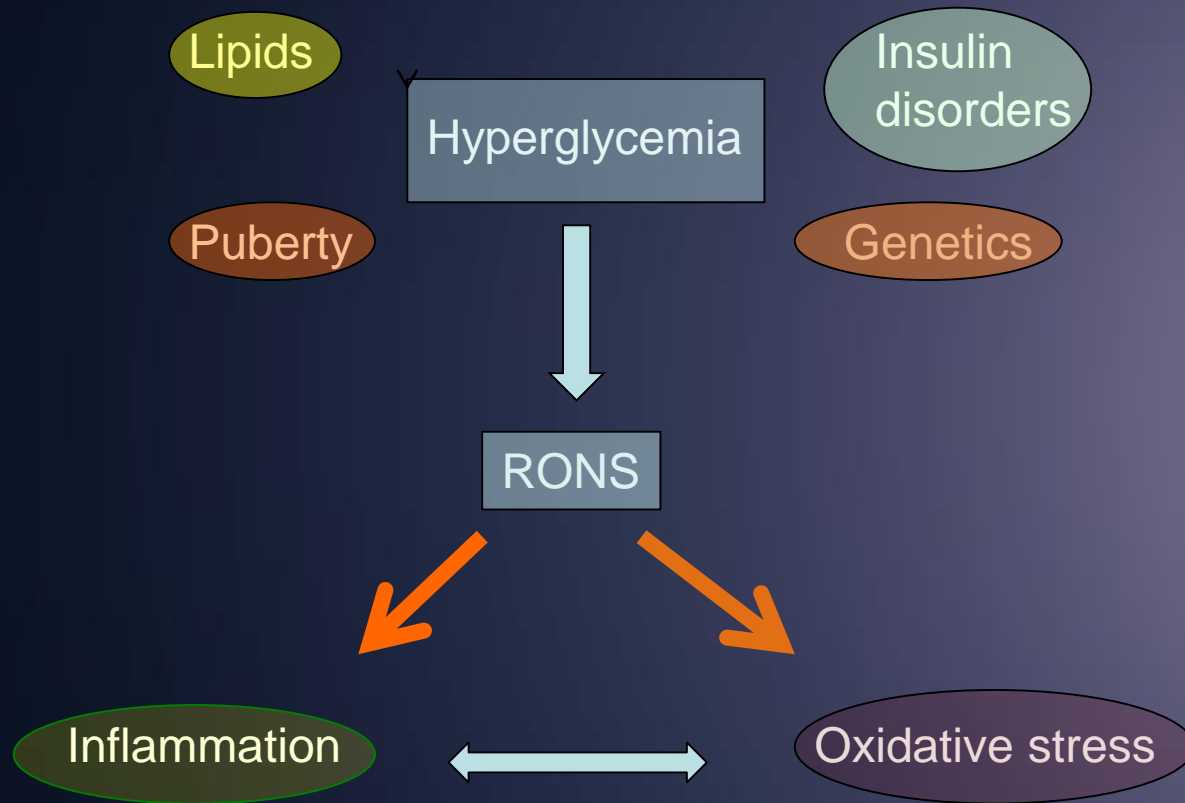
- Most common / 3rd most common / least common complication of DAN
- Warning signs: 1. Heart rate variability ; 2. QT interval; 3. Exercise tolerance; 4. Baroreflex sensitivity
- DM duration good / bad predictor of CAN
- DM affects longer / shorter nerves first
- Parasympathetic / Sympathetic nerves affected first
- nerves affected cardiomyopathy



Other Manifestations of DAN

- Sleep apnea: quality of life; sudden death (twice higher prevalence in DAN)
- GI: gastroparesis; esophageal dysmotility; constipation; diarrhea; incontinence; gallbladder atony
- Bladder: impaired sensation; urinary retention; incomplete emptying; urgency; recurrent UTIs
- Sexual: ED; retrograde ejaculation; vaginal dryness; anorgasmia
- Pupils: blurred vision with bright lights (Argyll-Robertson)
- Sweat gland denervation: skin dryness; foot ulcers

Mechanisms of DAN



Modified from Verotti et al, 2014

Prevention and Treatment

- Aggressive control of DM (lifestyle modifications and medications) to prevent onset of DAN
- Once established, DAN very hard to treat
- Insulin, ADA, anti-oxidants, ARIs (disappointing and side-effects), C-peptide, anti-HTN drugs, mitochondrial enhancers
- Symptomatic: conservative measures, midodrine, fludrocortisone, pyridostigmine, beta-blockers, clonidine, etc.