Acanthosis Nigricans, PCOS, Insulin Resistance, and Metabolic Syndrome a Differential Diagnosis
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Acanthosis Nigricans

**Definition:** A dermatological condition characterized by darkening and thickening (hyperpigmentation) of the skin. May include thickening of the skin and velvety texture.

**C/C:** hyperpigmentation and thick velvety skin in body folds and creases. It may be related to obesity and a sign of insulin resistance.

**Physical Findings:** Location is around the posterior neck and over flexor surfaces. Knees, ankles, elbows and under arm are common sites as is the groin area.

**Related Co morbidities:** It may be a sign of internal malignancy. Associated with insulin resistance and metabolic syndrome. It may be related to a congenital glandular disorder.

**Treatment:** treat underlying causes and consider a malignancy workup. Some resolution has been noted with use of retinol creams.

**ICD 9:** 701.2 acquired Acanthosis Nigricans

Dambro MR, Acanthosis Nigricans, Griffith's 5-Minute Medical Consult 2004 Lippencot 1213.
Acanthosis Nigricans
Clinical Pearl

In patients with Acanthosis Nigricans with or without DMII, that are not taking statins or other lipid lowering agents check their lipid panel, if their LDL and triglycerides are really low think cancer. The cancers of the endothelium eat up the cholesterol for energy especially the fast growing cancers that have a high energy demand.
**Polycystic Ovarian Syndrome**

**Definition:** Chronic ovarian dysfunction found in about 6% of pre-menopausal women.

**C/C:** amenorrhea/ Dysmenorrhea/ oligomenorrhea, abdominal pain related to ovarian cysts.

**Physical Findings:** androgenic characteristics such as low voice and Hirsutism, Acanthosis, Enlarged ovaries which may have multiple small cysts obesity, acne, infertility, seborrhea, Acanthosis

**Related Co morbidities:** metabolic syndrome, insulin resistance, DMII, CVD, HTN, Dyslipidemia, Infertility.

**Pertinent Lab:** Elevated Luteinizing hormone Low normal FSH, May have elevated insulin levels

**Treatments**
Low dose hormonal contraceptives, Depo-Provera can potentate insulin resistance. Treatment of the co morbidities such as obesity, insulin resistance metabolic syndrome

**ICD-9**
256.4 Polycystic Ovaries  
628.0 Female infertility associated with anovulation

Insulin Resistance Syndrome

**Definition:** clinically a state in which a given increase in plasma insulin in an individual causes less of an effect in lowering the plasma glucose than in the normal population result hyperinsulinemia. Excess insulin has many physiologic effects such as Metabolic Syndrome, Poly Cystic Ovary Disease, Impaired Glucose Tolerance, Acanthosis Nigricans,

**C/C:** Fatigue, difficulty loosing weight, concern of family history of CVD, DM II, can go all day without being hungry, irregular menses, Anovulation to heavy menses with clots.

**Physical Findings:** Hirsutism, Androgenic acne, oily skin, Acanthosis Nigricans in races with increased skin pigments, i.e. Hispanic, Indian, African American. predominantly centrally obese

**Related Co morbidities:** PCOS, DMII, CVD, HTN, Dyslipidemia.

**Pertinent Lab:** Fasting Glucose, Fasting Insulin Level ratio <4.5, C-Reactive Protein elevated, Lipid Panel, Liver Function Panel, Basic Metabolic Panel, TSH, Severely obese or high CVD Risk Cardiopulmonary workup and stress test.

**Treatment:** Diet and Exercise, Insulin sensitizing agents, increase fiber in diet, Treat co morbidities.

**ICD-9:** 704.1 Hirsutism, 626.3 Dysmenorrhea, 272.4 Dyslipidemia, 401.1 HTN, 256.4 PCOS, 783.1 Abnormal wt gain., 701.2 Acanthosis Nigricans.

Insulin Resistance Screening Test

- Fasting glucose to insulin ratio is a useful measure of insulin sensitivity.

Fasting glucose / Fasting Insulin level = Insulin Sensitivity.

Ratio less than 4.5 as abnormal.

This screen can be skewed when patient fasting, dieting, and exercising or is slender. Check the two hour post parandial glucose and insulin level.

Legro, D., Finegood, D., and Dunaif, A. A fasting glucose to insulin ratio is a useful measure of insulin sensitivity in women with polycystic ovary syndrome. The J Clinical Endocrinology & Metabolism. 1998; 83, (8):2694-2698.
**Definition:** clustering of cardiovascular risk factors including abdominal obesity, Hypertriglyceridemia, low HDL, HTN, and impaired Glucose tolerance.

**C/C:** Fatigue, difficulty loosing weight, concern of family history of CVD, DM,

**Physical Findings:** Abdominal Obesity (Men > 40 in, women > 35), Triglycerides >150mg/dl, low HDL (Men ≤40 mg/dl, Women ≤50 mg/dl), HTN, and Fasting Glucose >110 mg/dl

**Related Co morbidities:** PCOS, Insulin Resistance, DMII, CVD

**Pertinent Lab:** Fasting Glucose, Lipid Panel, Liver Function Panel, Basic Metabolic Panel, 2 hour GTT with IFG, TSH, Severely obese or high CVD Risk Cardiopulmonary workup and stress test.

**Treatment:** Treat the presenting problems with insulin sensitizers, statins and HTN medications.

**ICD-9:** 277.7 Metabolic Syndrome