

## Risk Factors Common to Insulin Resistance and Atherosclerosis Explain Why Diabetes Is a Cardiovascular Disease

ANAHEIM—A panoply of risk factors common to both insulin resistance and atherosclerosis, including hypertension, obesity, dyslipidemia, and platelet hypercoagulability, explain why diabetes is a cardiovascular disease, said Henry N. Ginsberg, MD, Irving Professor of Medicine and Director of the Irving Center for Clinical Research at Columbia University College of Physicians and Surgeons in New York.

With coronary atherosclerosis and peripheral vascular disease accounting for 80% of diabetes-related mortality in the United States, it is clear that factors in addition to hyperglycemia and hyperinsulinemia are responsible, he remarked.

“What is at play is an increased burden of risk across a range of risk factors,” Dr. Ginsberg explained, adding that evidence to support this

concept is seen in both the Multiple Risk Factor Intervention Trial and the East-West Study. Moreover, data from the Paris Prospective Study suggest that the increased burden of risk begins before the onset of diabetes with impaired glucose tolerance, and probably even before that.

What drives atherosclerosis through an assortment of risks before impaired glucose tolerance converts to diabetes is the insulin resistance syndrome, also known as the metabolic syndrome or Syndrome X, Dr. Ginsberg emphasized.

Identification and treatment of the insulin resistance syndrome are outlined in the **Table**. Approximately 50% of individuals with the syndrome are hypertensive, many are obese, many are hyperinsulinemic, and many have elevated levels of plasminogen activator

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**Table**

### Identification and Treatment of the Insulin Resistance Syndrome

#### Identification

Any 3 of the following:

Abdominal obesity	Waist circumference > 40" in men, > 35" in women
Elevated triglycerides	≥150 mg/dL
Low HDL-C	< 40 mg/dL (men) < 50 mg/dL (women)
Elevated fasting glucose	≥ 110 mg/dL
Elevated blood pressure	≥ 130/≥ 85 mm Hg

#### Treatment

Weight management/increased physical activity

Reduce blood pressure

Give aspirin to patients with coronary heart disease to reduce prothrombotic state

Lower triglycerides and/or raise HDL-C

Pharmacologic therapy is warranted if signs of insulin resistance syndrome are still present after 3 months of therapeutic lifestyle changes.

HDL-C = high-density lipoprotein cholesterol.

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inhibitor-1, fibrinogen, and factor VIII.

Of particular note, however, is the characteristic dyslipidemia that is present in about 80% to 90% of patients with insulin resistance, and consists of elevated total triglyceride levels, low levels of high-density lipoprotein cholesterol (HDL-C), and small, dense low-density lipoprotein cholesterol (LDL-C) particles.

With regard to treatment of the syndrome, the East-West Study

demonstrated that the combination of weight loss (5% of body weight) and increased exercise (30 minutes per day) was able to reduce the conversion of impaired glucose tolerance to full-blown diabetes by 60% over 4.5 years. The soon-to-be published results of the Diabetes Primary Prevention Program are virtually identical, he said.

He also recommended that all patients with diabetes be given aspirin, and that anti-ischemic agents (including beta blockers) be

given to insulin-resistant patients who have already had an ischemic event. He further recommended statins for patients who need to have their LDL-C levels lowered, regardless of their HDL-C or triglyceride levels. More aggressive treatment might include a statin plus a fibrate or niacin for those with low HDL-C and/or high triglycerides. The use of niacin in patients with insulin resistance or diabetes may, however, require changes in treatment of the latter problems. ■

**The characteristic dyslipidemia of insulin resistance – high triglycerides, low HDL-C, and small, dense LDL-C – is seen in 80% to 90% of affected patients.**

—Henry N. Ginsberg, MD