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Ashok Balasubramanyam, M.D., Baylor College of Medicine – Syndrome X

Dr. B's experience is in adult endocrinology – little experience with BBS

Today: Talking about Syndrome X, also known as

Metabolic Syndrome, Insulin Resistance Syndrome, Reaven's Syndrome

It is a cluster of risk factors that increase the risk of heart disease.

General population is catching up in obesity rates – Dr. B showed a map of the U.S. indicating by color of the state (where data was available) whether the population had crossed certain thresholds for weight. Pale blue was the “lightest”; red was a population of many overweight and obese persons. He clicked through data over the decades – the map was updated by color (above) for each measurement point. By the time he got to 2005, every state (except Colorado!) was RED.

Is the way the general population gets obese different than BBS? For many with BBS, it is simply a function of activity vs. intake. For some, it is much more complicated.

Percentage of young people who are overweight has greatly increased since 1976.

The map for diabetes looks similar to the map for obesity except that the population percentages with diabetes are smaller than the percentage who are obese.

Obesity pulls along diabetes and heart disease – that is, where obesity increases, the numbers for diabetes and heart disease increase also.

This combination of obesity, diabetes and heart disease go together.

Insulin resistance is at the center

juvenile diabetes – kids don't have insulin

adult diabetes – have insulin but it doesn't work – type 2

blood pressure goes up

clotting in blood increases

cholesterol increases

blood vessels are not flexible – hardening of arteries

there is (deep) abdominal fat – deep fat, behind the liver, clustered around intestines (visceral obesity) mostly tied to insulin resistance

So these things are tied to each other and we don't know which came first.

abdominal obesity – male waist of > 102 cm; female waist of > 88 cm.

Metabolic Syndrome have 3 or more of the following

- waist circumference > 40” for men or > 35” for women
- triglycerides high
- hdl cholesterol low
- systolic blood pressure is high (systolic is the first of the two blood pressure numbers)
- fasting glucose kind of high

How do we know it increases heart disease risk? There was a huge study done in the U.S.

- Persons who have No Metab Syndrome and No diabetes – prevalence of heart disease is 8 %
- Persons who have diabetes but no metab syn – prevalence about 7.5%
- Met Syn but no diab – prevalence of heart disease is 13.9%
- BOTH – much higher prevalence of heart disease

The risks are cumulative toward heart disease and extremely cumulative toward diabetes.

High risk of heart disease

- early age onset of diabetes
- family history of heart disease
- 1st-degree relative with diabetes
- have other inflammatory diseases
- have history of vascular diseases

Sleep apnea and obesity together greatly increase metabolic syndrome risk

Good news:

Modest weight loss can reduce the abdominal fat which may *trigger* metabolic syndrome

Modest Weight Loss reduces the incidence of diabetes in a high-risk population.

In one study, they tracked Metabolic Syndrome patients until they got diabetes – then they tracked their progress from that day forward where some had normal treatment for diabetes and the others were treated for *everything* in metabolic syndrome whether they had signs of those things (yet) or not.

Everything got much better for those who got this intense treatment – 50% risk-reduction for heart disease. This is a spectacular result.

If you recognize the risk factors and treat them aggressively, you can turn back the tide re heart disease instead of waiting until you get heart disease and then treating that.

How does this apply to BBS?

So far, I don't know exactly. But I do know that Metabolic Syndrome happens in BBS.

Is it different in BBS compared to other insulin resistant syndromes? I don't know; possibly; (there are groups whose metabolic syndrome is different from others.)

Should it be treated in persons with BBS? By all means, yes, treat the risk factors (see above).