

The Role of Testosterone in the Metabolic Syndrome in Men

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The Metabolic Syndrome is a complex disorder involving numerous metabolic and hormonal dysbalances. Abdominal obesity, dyslipidemia, insulin resistance and other factors contribute to a symptomatology which progressively leads into the manifestation of cardiovascular diseases and diabetes type 2. Epidemiological studies have shown associations between plasma levels of total testosterone and risk factors for the Metabolic Syndrome. Low testosterone levels are more common in patients with the Metabolic Syndrome, cardiovascular diseases, or diabetes type 2 than in the normal population. These findings are supported by animal experiments. Observations in prostate cancer patients receiving GnRH analogues as an androgen ablation therapy show an increased risk not only of osteoporosis but also of insulin resistance. Studies in obese men reveal that obese men in good or impaired health have lower testosterone levels than non-obese controls. Their risk of developing the Metabolic Syndrome and consequently diabetes and cardiovascular diseases is significantly higher than in men with normal weight. Several intervention studies suggest that the normalisation of testosterone levels in patients reduces fat mass, increases lean body mass and shows an overall improvement of the well-defined risk factors for the Metabolic Syndrome and its consecutive diseases. Hormones play a central role in the Metabolic Syndrome. The hypothesis developed by Bjorntorp's group in Gothenburg, Sweden, indicates a balance between fat accumulating and mobilizing hormones. Recent data show that a restoration of this balance may be beneficial for patients suffering from or being at risk of developing the Metabolic Syndrome.