

Continuous improvements of features of the metabolic syndrome over 48 months upon normalization of serum testosterone in two cohorts of men

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Introduction: Men >40 years often show a concurrence of a decline of testosterone with features of the metabolic syndrome. This study tested the effects of normalization of testosterone over a period of 48 months in two cohorts of men, studied in two clinics, following the same treatment protocol.

Subject and methods: cohort AH: 104 men aged 34-78 years (mean \pm SD: 62 \pm 8 yrs) with baseline testosterone 5.9 – 12.0 nmol/L, and cohort AY: 130 men aged 46-79 years (mean \pm SD: 61 \pm 9 yrs) with baseline testosterone 6.1-12.0 nmol/L were treated with parenteral testosterone undecanoate for 48 months as the sole intervention.

Results: Plasma levels of testosterone rose from 9.3 \pm 1.7 to 18.7 \pm 2.1 nmol/L reaching their maximum at 9 months and remaining stable over the next 33 months. Results are presented in tables AH and AY. There was a remarkable progressive decline of body weight and waist circumference over the full study period, most outspoken over the first 24 months. Plasma cholesterol, triglycerides, and LDL-cholesterol decreased significantly over the study period. Plasma HDL increased significantly over the first 24 months and then declined in cohort AH but increased over 48 months in cohort AY. Plasma glucose declined over the first 12-18 months and then

stabilized. Systolic blood pressure declined over 48 months in cohort AH and declined over 24 months to stabilize thereafter in cohort AY. At baseline, 79/104 men in cohort AH and 93/130 men in cohort AY met the criteria of the metabolic syndrome by the harmonized definition. After 48 months of testosterone treatment this number had declined to 50/104 in cohort AH and to 62/130 in cohort AY. Conclusion: With testosterone treatment over 48 months, the most significant improvement of variables of the metabolic syndrome was noted over the first 24 months with further improvement over the following 24 months. Body weight and waist circumference declined paralleled by improvements of cholesterol, LDL and triglycerides. A large number of men did not qualify as suffering from the metabolic syndrome after 48 months. Our data originating from two different clinics show a remarkable consistency in results.

AH											
	unit	0		12		24		36		48	
Waist circumference	cms	109,1 ±	10,0	105,5 ±	8,7	103,4 ±	8,7	102,2 ±	8,1	100,9 ±	7,7
Weight	kgs	107,6 ±	16,2	102,9 ±	14,1	99,1 ±	13,6	97,0 ±	11,9	94,3 ±	11,0
Glucose	75-110 mg/dl	105,8 ±	18,4	99,8 ±	13,5	96,2 ±	12,0	96,8 ±	8,2	97,0 ±	3,7
Cholesterol	<220 mg/dl	297,7 ±	37,7	214,0 ±	33,3	197,4 ±	21,1	198,5 ±	17,0	194,5 ±	14,2
HDL	<55 mg/dl	65,5 ±	29,8	68,7 ±	25,1	74,6 ±	28,2	53,3 ±	20,0	52,8 ±	19,2
LDL	<150 mg/dl	160,4 ±	42,7	132,5 ±	36,8	121,1 ±	37,8	119,4 ±	34,2	118,3 ±	34,7
Triglyceride	<180 mg/dl	290,4 ±	54,6	213,8 ±	41,7	198,9 ±	29,2	196,9 ±	18,0	194,2 ±	16,2
Systolic BP	m m Hg	157,6 ±	15,2	145,7 ±	14,7	142,7 ±	12,0	142,5 ±	11,8	141,4 ±	11,3
Dias tolic BP	m m Hg	95,7 ±	11,0	85,4 ±	9,3	83,1 ±	8,4	82,1 ±	7,6	81,9 ±	7,7
AY											
	unit	0		12		24		36		48	
Waist circumference	cms	107,6 ±	9,2	102,0 ±	8,1	100,9 ±	7,8	98,4 ±	7,1	97,4 ±	6,2
Weight	kgs	106,3 ±	12,8	97,5 ±	16,8	97,6 ±	12,2	94,0 ±	10,6	92,8 ±	9,3
Glucose	75-110 mg/dl	111,4 ±	33,3	96,7 ±	18,2	100,4 ±	16,1	99,8 ±	14,3	99,0 ±	16,5
Cholesterol	<220 mg/dl	268,7 ±	43,0	209,9 ±	28,8	245,9 ±	48,1	224,6 ±	41,0	223,4 ±	46,1
HDL	<55 mg/dl	39,2 ±	14,4	49,3 ±	12,3	54,0 ±	17,7	59,3 ±	16,6	56,0 ±	16,7
LDL	<150 mg/dl	165,5 ±	23,5	132,7 ±	28,2	140,5 ±	32,6	132,1 ±	38,6	126,0 ±	37,4
Triglyceride	<180 mg/dl	262,9 ±	66,7	210,1 ±	41,7	235,8 ±	56,1	217,0 ±	52,1	216,8 ±	44,1
Systolic BP	m m Hg	141,5 ±	13,3	129,4 ±	8,9	125,9 ±	6,6	123,5 ±	4,8	123,2 ±	4,4
Dias tolic BP	m m Hg	80,9 ±	10,0	76,8 ±	5,0	79,1 ±	5,5	79,1 ±	2,8	79,0 ±	3,5