MP78-01 TRENDS IN SERUM TESTOSTERONE LEVELS AMONG ADOLESCENT AND YOUNG ADULT MEN IN THE UNITED STATES



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Soum D. Lokeshwar¹, Premal Patel², Richard Fantus³, Joshua Halpern⁴, Cecilia Chang³, Atil Kargi¹, Ranjith Ramasamy¹ ¹University of Miami, Miller School of Medicine, Miami FI, ²Uniersity of Manitoba, Winnipeg, Canada; ³University of Chicago, School of Medicine, Chicago IL; ⁴Feinberg School of Medicine, Northwestern University, Chicago IL

Introduction

Testosterone deficiency has a prevalence 20% among adolescent and young adult (AYA) men (males 15-39 as per the National Cancer Institute). With increasing prevalence of low testosterone in the general population, we hypothesized that serum total testosterone (TT) levels will decline in AYA men.

Aim

To analyze serum TT levels in AYA males using data from the National Health and Nutrition Examination Surveys (NHANES) 1999-2016

Method

- NHANES is a nationally representative cross-sectional survey that examines the US population and oversamples targeted populations, to obtain adequate samples for subgroup analysis and more reliable variable estimates.
- We found data cycles which had values for serum TT and analyzed changes in serum TT over time controlling for year of study, age, race, body mass index (BMI), comorbidity status, alcohol and smoking use, and level of physical activity.
- During the study periods, three different assays (Biotin-Streptavidin from 1999-2004, IS-Liquid Chromatography from 2011-2012 and High-Performance-Liquid-Chromatography Tandem Mass Spectrometry from 2013 onwards) were used; they have shown comparable testosterone values with only some additional accuracy in the latest modality.

Results

After controlling for confounders, TT was lower among men in the later (2011-2016) versus earlier (1999-2000) cycles (all p < 0.001)





Table 2 - Linear reg	ression mo	del with	continuou	us testos	sterone le	vel						
	Univariable				Multivariable				Multivariable			
	Estimate	95% CI		p-value	Estimate	nate 95% Cl		p-value	Estimate	95% CI		p-value
Years of datasets												
1999-2000 (ref)	-	-	-	-	-	-	-	-				
2003-2004	-37.952	-92.067	16.163	0.1665	-18.120	-67.736	31.495	0.4692	-17.590	-67.385	32.204	0.4838
2011-2012	-180.436	-224.992	-135.881	<.0001	-161.369	-200.964	-121.775	<.0001	-161.054	-200.546	-121.561	<.0001
2013-2014	-173.634	-217.853	-129.414	<.0001	-146.918	-185.626	-108.209	<.0001	-146.761	-185.463	-108.059	<.0001
2015-2016	-154.169	-200.529	-107.809	<.0001	-126.462	-167.707	-85.217	<.0001	-126.264	-167.551	-84.976	<.0001
Demographics												
Age (years)	-2.430	-3.579	-1.281	<.0001	0.015	-1.006	1.036	0.9772	-0.016	-1.037	1.005	0.9750
BMI	-11.499	-12.686	-10.313	<.0001	-11.402	-12.624	-10.179	<.0001	-11.380	-12.590	-10.169	<.0001
Smoking Status	29.397	-0.959	59.753	0.0575	-	-	-	-	-	-	-	-
Alcohol Use	14.799	-10.574	40.171	0.2490	-	-	-	-	-	-	-	-
Diabetes	-36.877	-107.372	33.617	0.3008	18.032	-46.780	82.845	0.5811	18.301	-44.044	80.646	0.5605
Comorbidity Index												
0 (ref)	-	-	-	-	-	-	-	-	-	-	-	-
1	-4.733	-23.521	14.054	0.6173	6.795	-11.680	25.271	0.4661	-	-	-	-
≥ 2	-32.983	-99.331	33.364	0.3253	-11.212	-75.444	53.019	0.7290	-	-	-	-
Activity Level												
Vigorous (ref)	-	-	-	-	-	-	-	-	-	-	-	-
Moderate	-27.681	-48.519	-6.843	0.0099	-17.232	-34.851	0.386	0.0551	-17.098	-34.672	0.477	0.0564
< Moderate	-16.496	-32.168	-0.823	0.0394	-8.466	-22.245	5.313	0.2248	-8.285	-21.951	5.380	0.2310

- 4.045 men had TT measured from 1999-2016.
- Mean TT decreased over time: 605.39 ng/dL, 567.44, 424.96, 431.76 and 451.22 for 1999-2000, 2003-2004, 2011-2012, 2013-2014 and 2015-2016, respectively (p < 0.0001, Figure 1).
- Elevated BMI was associated with reduced TT levels (p < 0.0001) with mean BMI increasing from 25.83, 27.21, 27.12, 27.81, 27.96 for 1999-2000, 2003-2004, 2011-2012, 2013-2014 and 2015-2016, respectively, p = 0.0006.
- Even in normal BMI (18.5-24.9) men, TT levels have declined from 664.79 ng/dL to 529.24 ng/dL between 1999-2000 and 2015-2016 (p < 0.05)

Conclusions

This is the first study to report declining TT levels in AYA men, which may have large ramifications as low testosterone has been linked to underlying comorbidities and potentially increased mortality risk. Further studies are required to understand the etiology of low testosterone in AYA men.

Contacts

- Ranjith Ramasamy: ranjithrama@gmail.com
- Soum Lokeshwar: soumlokeshwar@gmail.com

Publication

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