

# ASSESSMENT OF METABOLIC MARKERS (MYOSTATIN, IGF-1), ASSOCIATED WITH THE STATE OF THE LEAN COMPONENT IN YOUNG ADULTS WITH TYPE 1 DIABETES

**Dydyshka Y.V., Shepelkevich A.P.**

*Department of Endocrinology, Belarusian State Medical University, Minsk, Belarus.*

## BACKGROUND AND AIM:

There is compelling evidence that the decline in appendicular muscle mass is a poor prognostic factor for the development of chronic complications of diabetes. In addition to chronic hyperglycemia, reduction of muscle component may be determined by metabolic disorders.

Therefore, **the aim** of study was to assess the possible links between serum myostatin, IGF-1 and a reduction in muscle mass in type 1 diabetes mellitus (T1DM).

## SUBJECTS AND METHODS:

- 95 patients with T1DM (60 women, 35 males) (mean age: 31,61±7,98 yrs, duration of DM: 13 (7 – 20) yrs, age of manifestation: 17 (12 – 23) yrs, BMI: 23,41±3,04, HbA1c: 8,3±1,014% ) and 55 (31 women, 24 men) controls.

## The research involved:

- ✓ Anthropometry of patients ((height, weight, BMI, waist circumference)
- ✓ General clinic examination
- ✓ Biochemical analysis: HbA1, serum myostatin, IGF-1
- ✓ Dual-Energy X-ray Absorptiometry (DXA) using a program “Body composition”

## RESULTS:

- ✓ There was a reduction of lean component of the arms (U=248; p=0,017), legs (U=208; p=0,002), total appendicular (U=219; p=0,004) and total lean (U=259; p=0,027) component in men with T1DM.
- ✓ Differences of lean mass at women with T1DM were in the increase of lean component of arms (U=6774, p=0,044) and lean android (U=604, p=0,008).
- ✓ There were revealed comparable levels of serum myostatin in patients with T1DM and control groups, respectively 589 (457.26 - 826) and 675.38 (491.94 – 750.34) pg/mL; U=838; p= 0.982) (Figure 1).
- ✓ Taking into account gender differences the content of lean component, men with T1DM showed a significant and high levels of myostatin (792.64 (557.03 – 972.83) vs 529,23 (443,55-625,86) pg/mL, U=232,5; p =0,006) compared to women that confirm the need for clinical interpretation of this indicator taking into account gender (Figure 2).

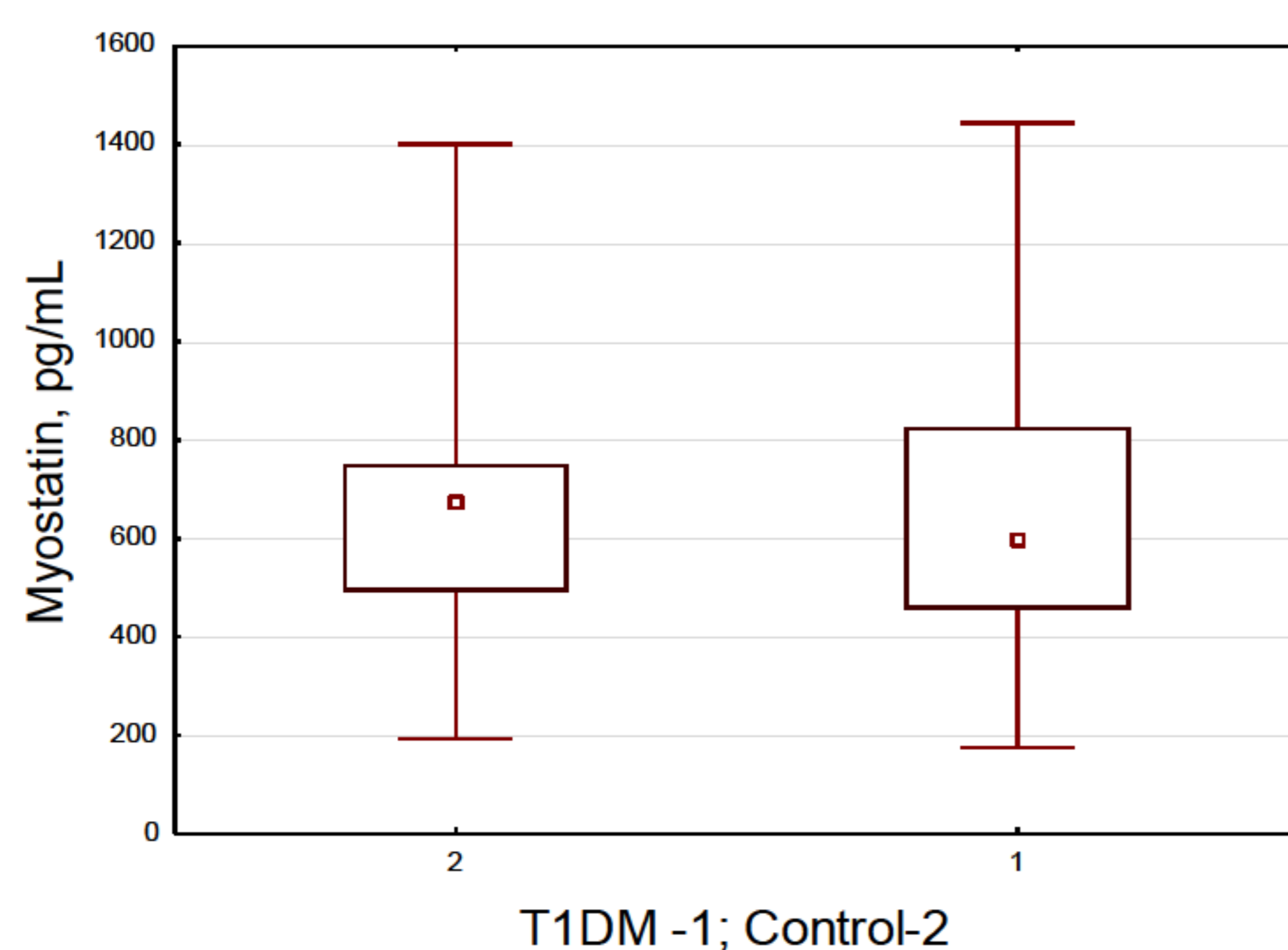


Figure 1 - Levels of serum myostatin in patients with T1DM and control groups

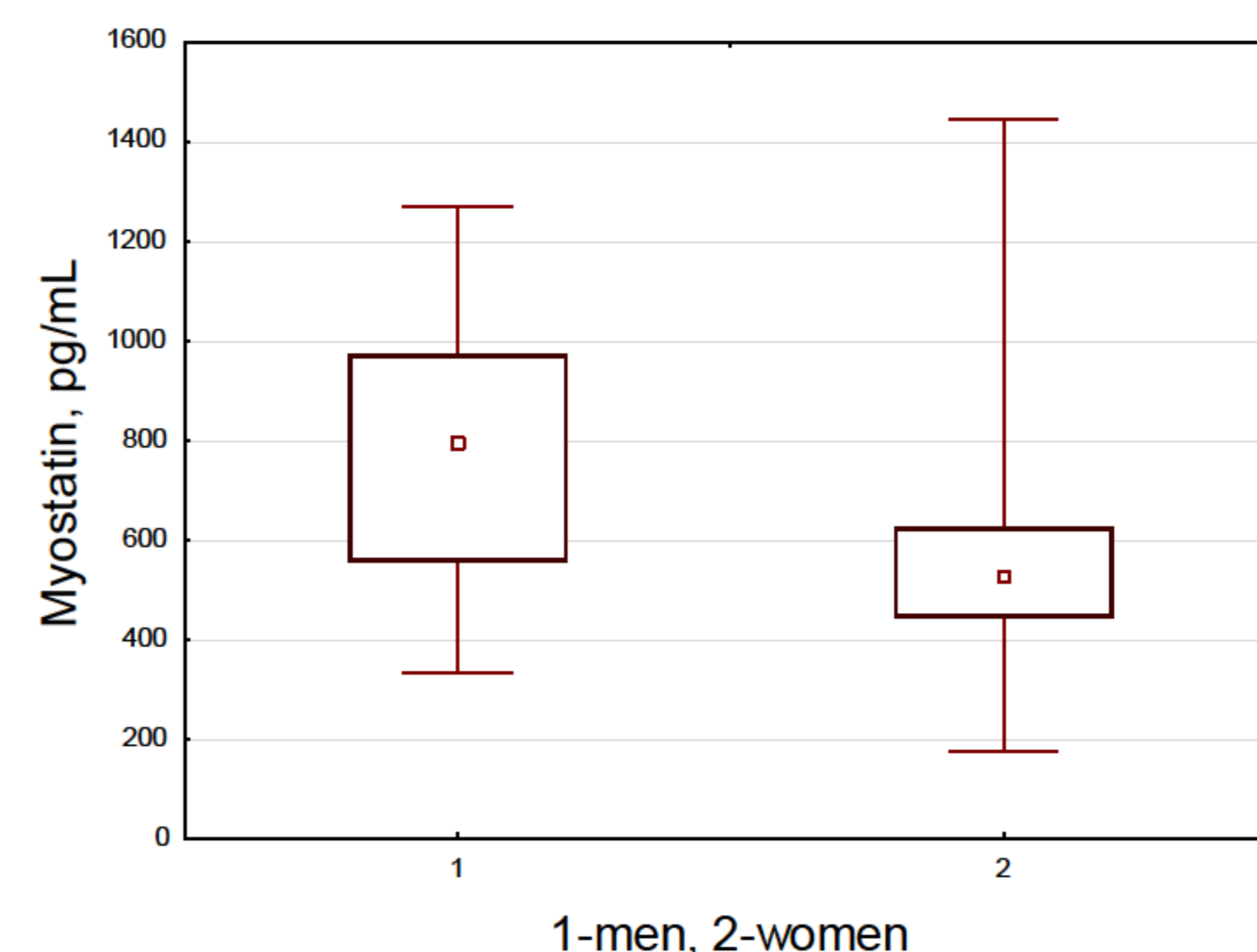


Figure 2 - Levels of serum myostatin in patients with T1DM

- ✓ . Men and women with T1DM have a comparable content of serum myostatin with control groups: women 529,23 (455,65-625,86) vs 604,54 (391,53-745,53)pg/ml, U=309;p=0.585; men 792,64 (557,025-972,82) vs 704,95 (593,54-790,23) pg/mL, U=90;p=0.48, respectively.

- ✓ We were also obtained significant differences by gender in the content of serum IGF-1 in patients T1DM: men compared to women showed a significant lower content of IGF-1 (146,77 (121,2– 231,36) vs 106,15 (96,28 – 138,67) ng/ml, U=227,5; p=0,004).

## CONCLUSIONS:

- Elevated levels of myostatin in men with diabetes can cause more expressed loss of muscle mass. Higher content IGF-1 explains the increase in the lean component of the abdomen in women.

