

Diabetes mellitus and carbohydrate metabolism in primary hyperparathyroidism

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Mokrysheva N.G., Rozhinskaya L.Ya., Mirnaya S.S., Lipatenkova A.K.
Endocrinology Research Centre, Moscow, Russia

ЭНЦ
FEDERAL STATE BUDGETARY INSTITUTION
«ENDOCRINOLOGY RESEARCH CENTRE»
MINISTRY OF HEALTH OF THE RUSSIAN FEDERATION

Objective

Primary hyperparathyroidism (pHPT) results in alterations in carbohydrate metabolism, characterized by insulin resistance, hyperinsulinemia, and glucose intolerance.

The aim of our study was to evaluate carbohydrate metabolism status in patients with pHPT.

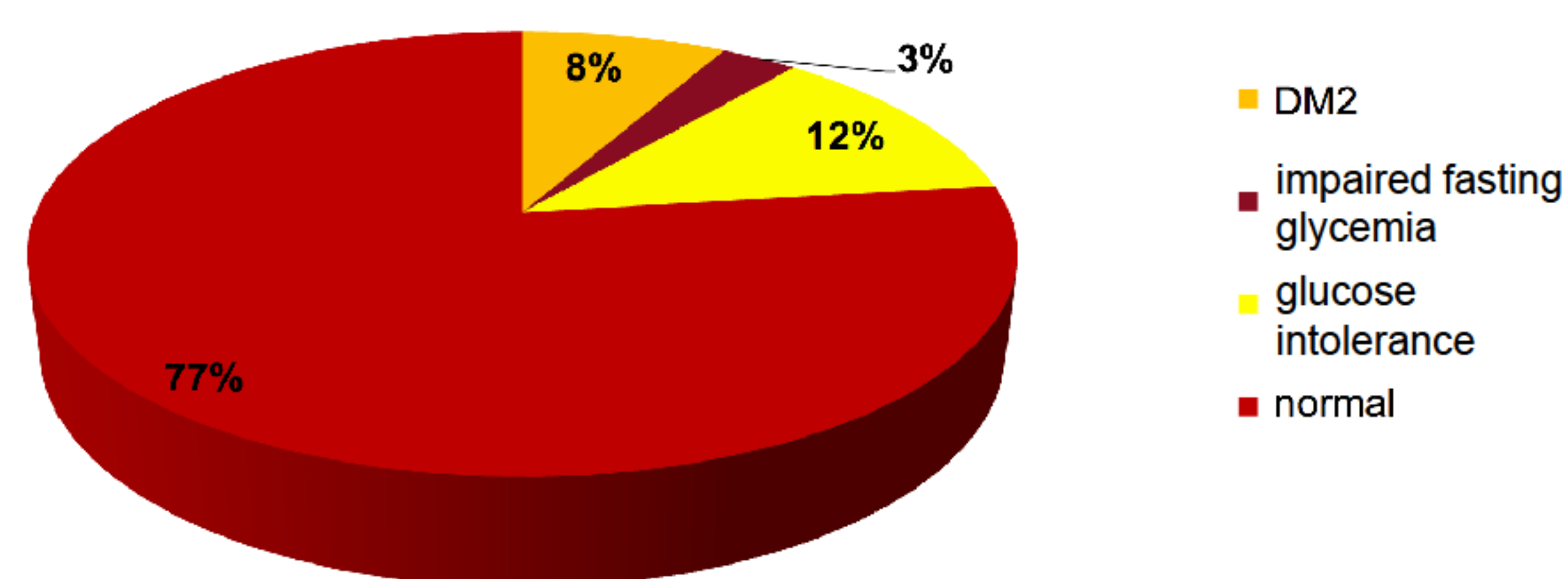
Patients and methods

109 patients with pHPT were investigated, healthy controls included 36 individuals matched by sex, age and BMI (BMI=27±5 kg/m²). Blood tests, and 75 gram oral glucose tolerance test results were evaluated, HOMA index was adjusted as immunoreactive insulin*glucose/22.

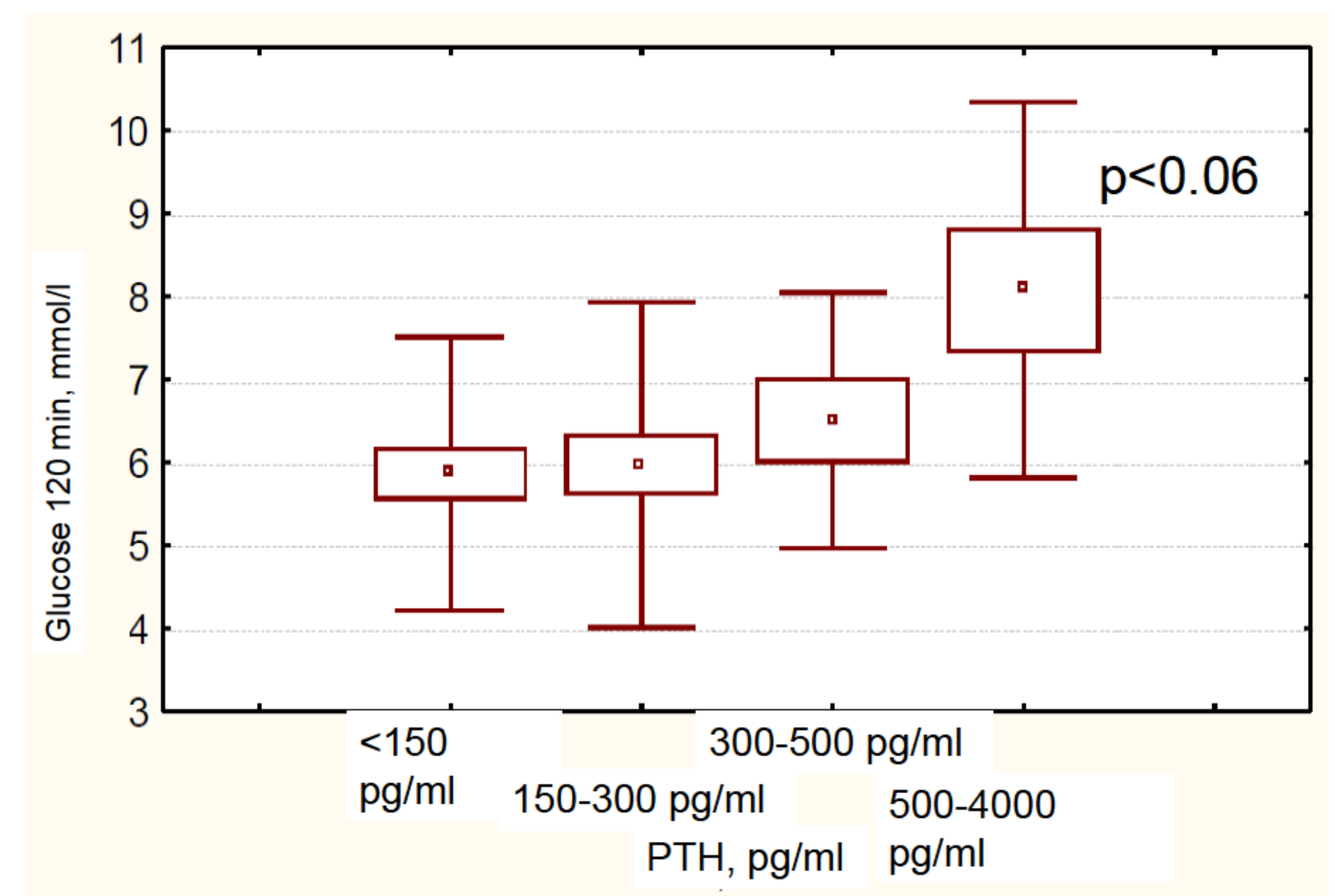
Results

8% patients had type 2 diabetes mellitus (DM), impaired fasting glycemia was observed in 3% and glucose intolerance in 12% of patients with pHPT (pic.1). There was no difference between groups with mild and severe forms of the disease regarding basal glucose level, plasma immunoreactive insulin (IRI) and HOMA index (p=0.43). Postprandial glucose increased in patients with severe compared to mild form (p<0.06) (pic.2). Thus glucose level was significantly raising in accordance with the PTH level elevation (H=8.2; p=0.04). Postprandial insulin was significantly increased in patients with severe form (p<0.01), we found correlation with ionized serum calcium (r=0.3; p=0.006), but not with PTH level (pic.3). The relative risk of type 2 DM in patients with severe pHPT (8.5%) raised by 2.3 times (CI 95% 0.3; 1.8) and was higher than in patients with the mild form (3.7%), which is comparable with control group.

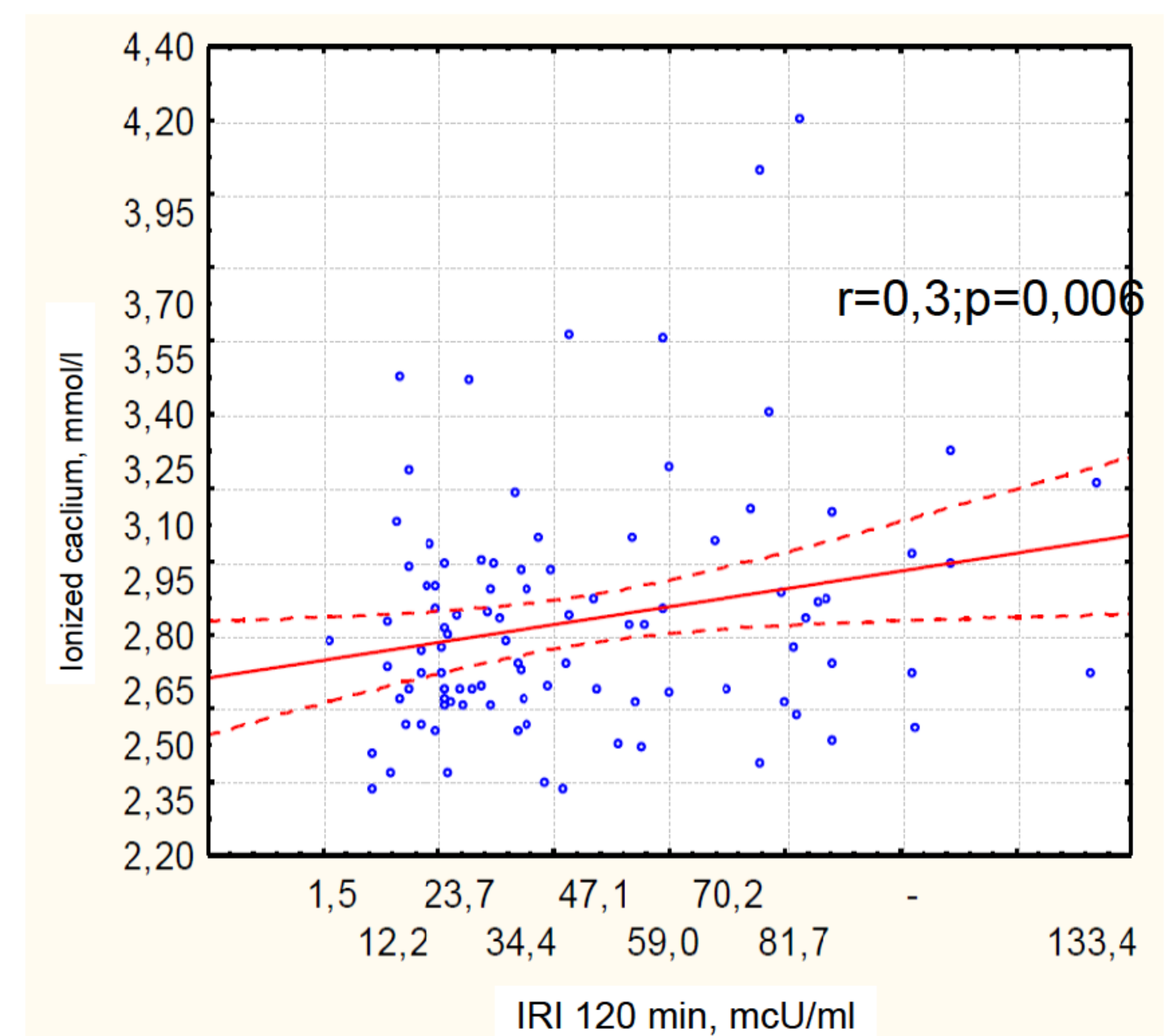
Picture 1. Carbohydrate metabolism in patients with pHPT



Picture 2. Postprandial glucose and PTH level in patients with pHPT



Picture 3. Postprandial insulin and ionized serum calcium in patients with pHPT



Conclusions:

Our work shows that patients with primary hyperparathyroidism feature disturbances in carbohydrate metabolism. The incidence and prevalence of type 2 diabetes mellitus is significantly increased in group with severe form pHPT. These results argue for improved screening to identify carbohydrate metabolism status in patients with pHPT.

Contact author – svetlanamirnaya@yahoo.com

