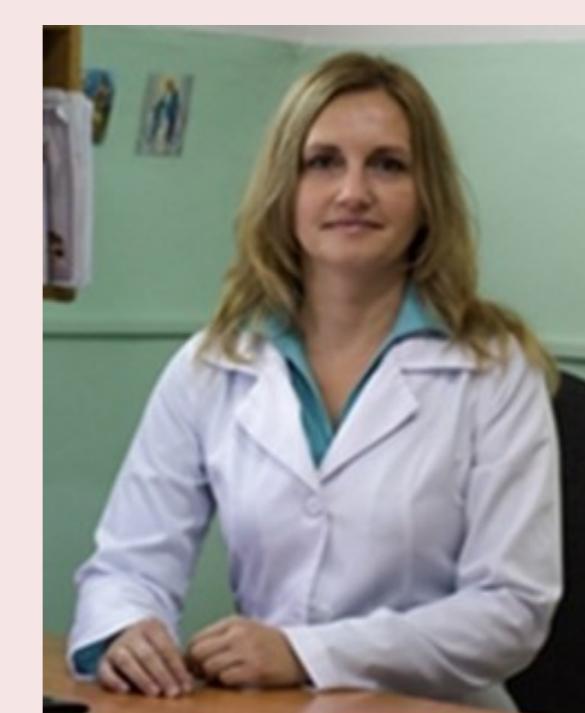




Prognostic role of melatonin in obstructive sleep apnea syndrome in patients with gastroesophageal reflux disease



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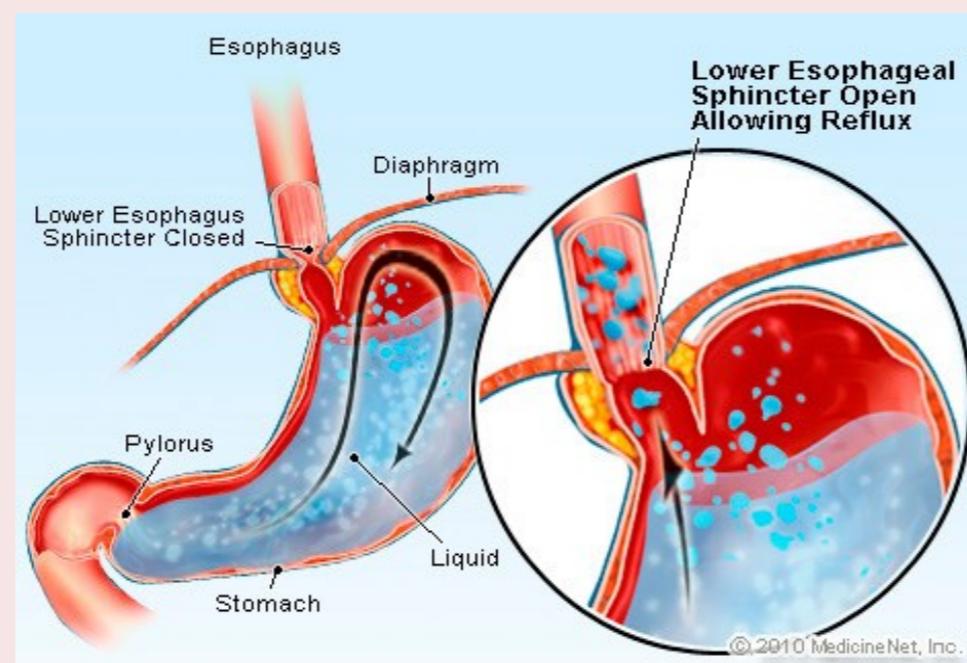
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Introduction

Gastroesophageal reflux disease (GERD) and obstructive sleep apnea syndrome (OSAS) are widespread medical conditions and often occur as associated disorders. There is some evidence of probable association of Barrett's esophagus development and OSAS. However, it has been proved that timely OSAS treatment results in the reduction of GERD symptoms. The issues of OSAS prediction in GERD patients have not been properly described, therefore the investigations in this area are rather topical.

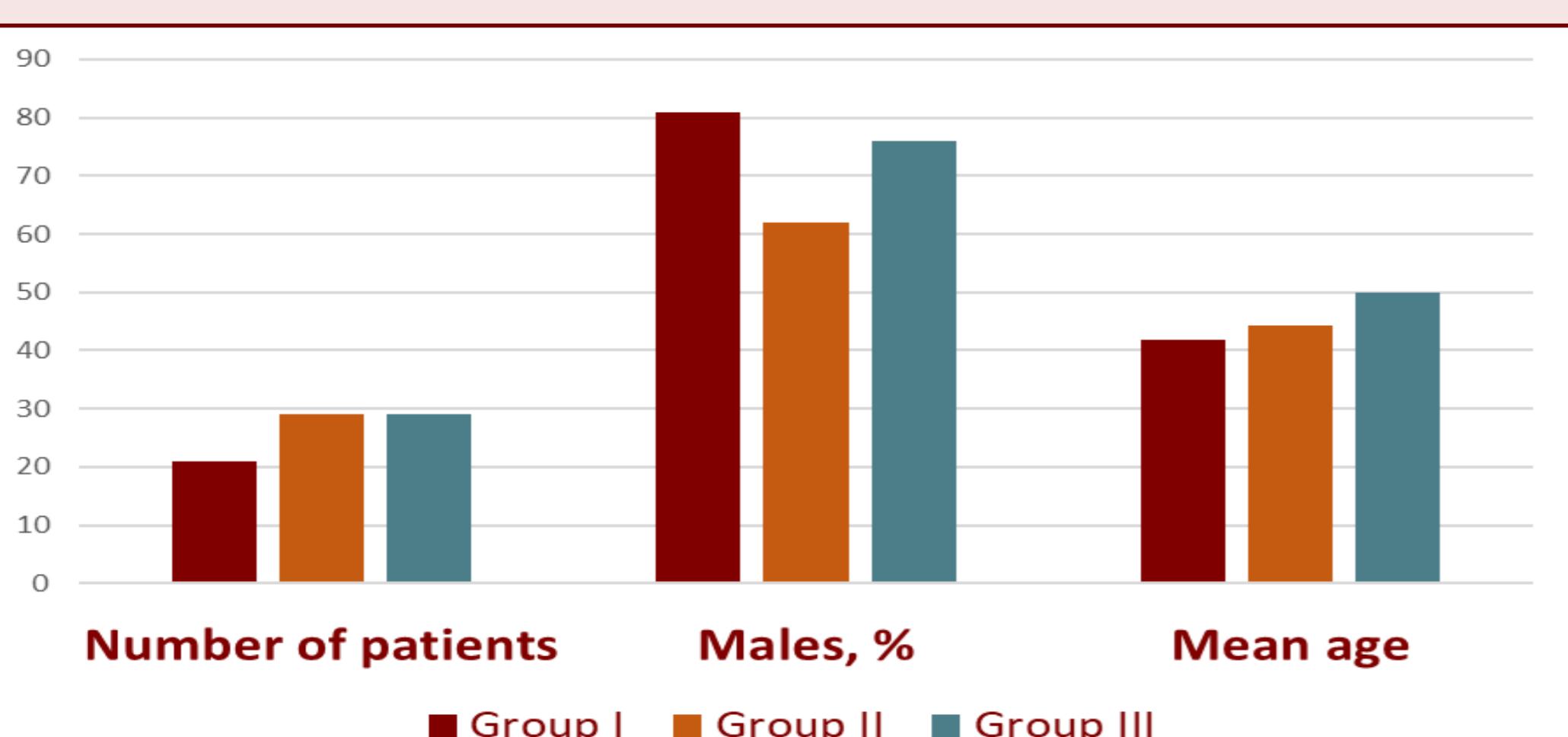
Study aims

The aim of the study was to investigate 24-hour secretion of melatonin in patients with GERD associated with OSAS (GERD/OSAS).



Materials and methods

The investigations were carried out in 79 persons, aged 30-60 years, including healthy subjects (group I, n=21), and patients with GERD (group II, n=29), with GERD/OSAS (group III, n=29). Diagnoses were made on the basis of endoscopic imaging, histological examination, and cardiorespiratory monitoring. Daily melatonin production was assessed by concentration of 6-sulfatoxymelatonin (6-SMT) in 24-hour urine (as well as separately for day and night) by the ELISA method, night/day index was calculated.



Results

The average 6-SMT concentration in healthy subjects was 80.0 (33.42;113.86) ng/ml in 24-hour urine, 64.95 (16.67;152.36) ng/ml in the daytime portion of urine and 85.71 (60.20;151.0) ng /ml in the nocturnal portion of urine. In patients with GERD 6-SMT concentration was lower than in healthy subjects: 30.53 (7.1; 71.78) ng/ml in 24-hours urine, 31.53 (8.1; 73.34) ng/ml and in a nocturnal portion of urine ($p = 0.014$; $p = 0.0018$). In patients with GERD/OSAS the content of 6-SMT in urine is significantly higher than in patients with GERD: 101.89 (72.12;149.67) ng/ml in the 24-hour urine, 131.0 (89.28; 180.44) ng/ml in a daytime portion of urine and 80.68 (24.25; 121.34) ng /ml in a nocturnal portion of urine ($p < 0.0001$; $p < 0.0001$; $p = 0.015$).

Results

The positive correlation was revealed between the severity of OSAS and the level of 6-SMT in 24-hour urine ($r = 0.52$, $p = 0.00001$) and in daytime urine ($r = 0.50$, $p = 0.00002$).

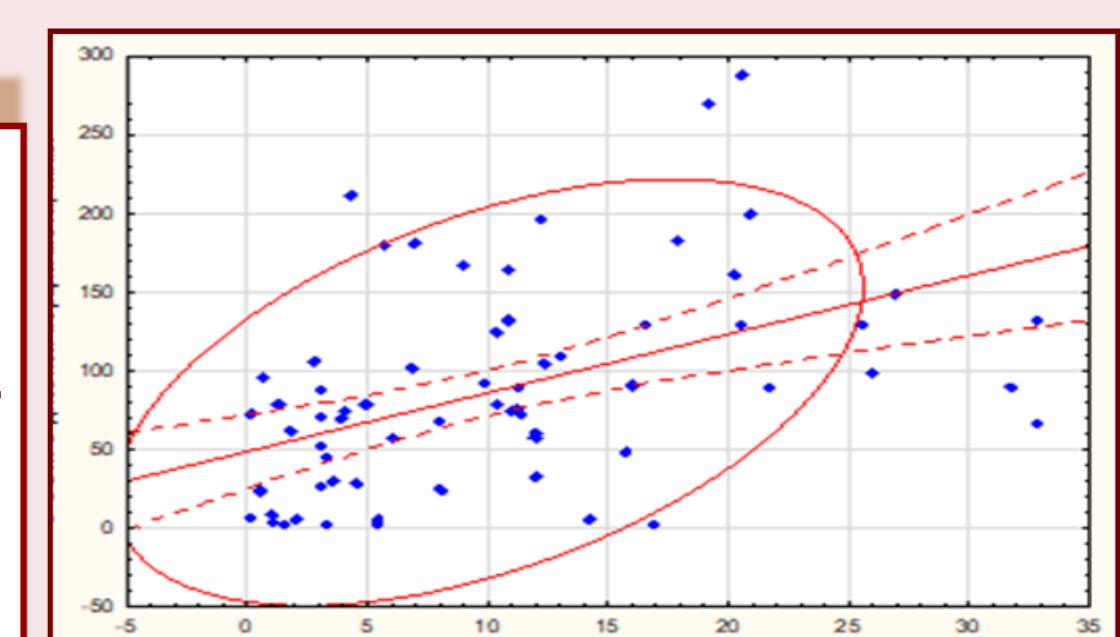


Fig. 1. The correlation between the severity of OSAS and the level of 6-SMT in daytime urine

Results

The predictive value of concentration of 6-SMT in a daytime portion of urine was analyzed using a receiver operator characteristic (ROC) curve and was a more powerful predictor of OSAS than its concentration in a 24-hour urine (AUROC = 0.91 vs. 0.88, respectively). The threshold value of 6-SMT level in a daily portion of urine is 73.08 ng / ml (sensitivity 92.3%, specificity 72.4%).

Conclusions

patients with GERD are recommended to have the level of 6-SMT in a daily portion of urine determined for the purpose of forecasting OSAS and at the value of 73.08 ng / ml and more to be administered polysomnography.

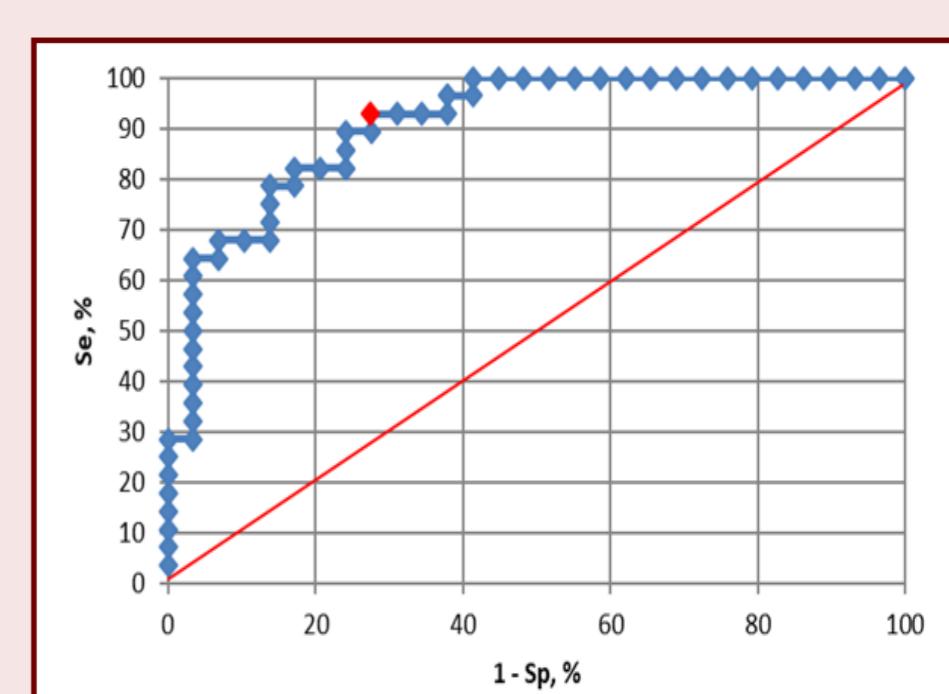


Fig. 2. ROC-curve