

Summary

Background: Gastroesophageal reflux disease (GERD) is a common health problem with multiple factors involved in its pathogenesis. Risk factors for GERD include obstructive sleep apnea (OSA) and obesity. Dysfunction of the lower esophageal sphincter leads to development of GERD in these diseases. However, the mechanism by which this dysfunction develops is unknown. In obesity and OSA, deviations in the concentrations of the neuropeptides ghrelin, leptin, and obestatin are observed. These neuropeptides affect gastrointestinal tract motility, and therefore, disturbances in their concentrations may affect the clinical course of GERD.

Aim: The aim of our study was to evaluate the influence of OSA on the ghrelin, obestatin, and leptin profile and to investigate the importance of this influence on the development of GERD. An additional aim was to investigate the differences in the clinical course of GERD depending on the presence of carbohydrate metabolism disorders.

Methods: Statistical analysis was performed on the data collected from 58 patients hospitalized in the Department of Internal Medicine at the Institute of Rural Medicine in Lublin. The data included anthropometric measurements, survey data on OSA symptoms and GERD-related complaints, polysomnography results, esophagogastroduodenoscopy and esophageal pH-measurement results, and the nocturnal profile of ghrelin, leptin, and obestatin levels.

Results: Based on the analysis of the collected data, relationships between obesity, OSA and GERD were observed. Gastroesophageal reflux disease was found to be more common among people with OSA and obesity. Statistical analyses of the studied neuropeptides showed that obesity was associated with lower ghrelin concentrations. This correlation was statistically significant for the mean value of ghrelin and for measurements taken in the first half of the

night. Similarly, in OSA, there was a trend towards lower ghrelin concentrations, but in this case, the correlation was statistically significant only for measurements from the second half of the night. In our study, no correlation was observed between the obesity parameters and the values of obestatin and leptin. Moreover, values of obestatin and OSA showed no correlation. In turn, leptin concentrations in OSA were lower, but the difference was not statistically significant. Our analyzes did not show any significant correlation between the concentrations of ghrelin, obestatin, and leptin and the diagnosis and severity of GERD. However, unlike in OSA and obesity, there was a trend towards greater ghrelin and leptin levels in GERD. This observation is important for the conclusions of the study because it argues against the importance of ghrelin disturbances in the development of GERD in OSA and obesity. Moreover, no differences in the clinical course of GERD were found which could explain the increased risk of complications among patients with carbohydrate metabolism disorders and obesity.

Conclusions:

1 / Obstructive sleep apnea is more common among obese people and its severity correlates with the degree of obesity.

2/ Obesity and OSA negatively correlate with ghrelin levels. Deviation in ghrelin levels is, to a greater extent, due to obesity, while OSA appears to exacerbate these deviations.

3/ Obstructive sleep apnea is associated with a more frequent occurrence of gastroesophageal reflux disease.

4/ Obesity and OSA correlate with lower ghrelin concentrations, while GERD was associated with greater values of ghrelin. Taken together, our data show that the association of obesity and OSA with GERD is not due to disturbances in ghrelin levels.

Key words: gastroesophageal reflux disease, obstructive sleep apnea, obesity, ghrelin, obestatin, leptin.