Abstract: Introduction: Obesity has been associated with increased mortality from hormone dependant cancers such as breast cancer which is the most prevalent cancer in women. The link between obesity and breast cancer can be attributed to excess estrogen produced through aromatization in adipose tissue. The role of steroid hormone receptors in breast cancer development is well studied but how obesity can affect the expression pattern of steroid hormones in patients with different grades of breast cancer was the aim of this study.

Methods: In this case-control study, 70 women with breast cancer participated with different grades of obesity (36 none obese, BMI < 25 kg/m2 and 34 obese, BMI ≥ 25 kg/m2). The mean age of participants was 44.53 ± 1.79 yr (21–70 yr). The serum level of estrogen, progesterone and androgen determined by ELISA. Following quantitative expression of steroid hormone receptors mRNA in tumor tissues evaluated by Real-time PCR. Patients with previous history of radiotherapy or chemotherapy were excluded. SPSS 16 was used for data analysis and P < 0.05 considered statistically significant.

Results: The difference in ERα, ERβ and PR mRNA level between normal and obese patients was significant (P <0.001). In addition, the expression of AR mRNA was found to be higher than other steroid receptors. There was no significant relation between ERβ gene expression in two groups (P = 0.68). We observed a significant relationship between ERα and AR mRNA with tumor stage and tumor grade, respectively (P = 0.023, P = 0.015).

Conclusion: According to the obtained results, it is speculated that obesity could play a significant role in estrogen receptors gene expression and also could affect progression and proliferation of breast cancer cells.

obesity, breast cancer, steroid receptors, steroid hormones

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