ABSTRACT

Background:

Varicocele, the abnormal dilatation of the veins in the pampiniform plexus is commonly seen in infertile patients. In this study, we aim to examine the effects of unilateral varicose ovarian vein on oocyte apoptosis of a rat after the creation of experimental varicocele in the rats.

Materials and Methods:

In this experimental study, a total of 30 adult female Wistar albino rats were divided into three groups. Ten rats in group as the control group. Ten rats in group 2 as the sham group, that underwent a sham operation and 10 rats in group 3 as the varicocele group. All rats were sacrificed after 8 weeks to observe the effects of the unilateral varicocele vein. The anti-oxidant assays were assessed with catalase assay kit, glutathione assay kit, sodium dismuthase assay kit and gene expression was done by real time pcr. The activities of the anti-oxidant were calculated and each group's activities and gene expression were compared to each other. Statistical analysis was performed using the one way ANOVA and Tukey's tests were used for *post hoc* multiple comparisons, $P<0.05$ was considered statistically significant**.**

Results:

The effects of the unilateral varicose ovarian vein was more evident on the left side when compared to the right side as all activities of the anti-oxidant assayed were significantly reduced, $P\leq 0.05$ when compared to the right side. In addition, NO concentration on the left side increases significantly, $P\leq 0.05$ when compared to the right side statistically.

The gene expression assessed by real time pcr shows that the activities of gdf-9, hsp-27 and bmp-15 were all significantly reduced at $p\leq 0.05$. The expression of bax gene, a pro-apoptotic gene increased significantly in the varicocele group when compared to the sham and control group and this indicates an initiation in apoptotic process.

Conclusion:

The results of this study shows that varicocele may lead to increased female infertility through various factors, that includes down regulation of bmp-15 and gdf-9 and hsp-27 gene expression, increases expression of the pro-apoptotic bax gene and an imbalance between pro-oxidant activities and anti-oxidant activities ratio.

Keywords: Varicocele, apoptosis, unilateral, anti-oxidant, gene expression.