Background: Leptin may act through the hypothalamic-hypophyseal axis to regulate body metabolism, accelerate the onset of puberty and enhance follicular development. Objective: To quantify the number of follicles, ovarian weight and body weight of immature rats treated with leptin when compared with controls. Subjects and methods: Fifty female albino rats aged 22 days were divided into: Treatment Group (n=24) injected with 5µg leptin daily for 20 days, and Control Group (n=26) injected with the solvent. The weight of each rat was measured, 3 animals were sacrificed every 2-4 days from each group and ovaries were dissected and weighed. Ovarian sections were stained with haematoxylin & Eosin, and the antral follicles were counted using light microscope. Data presented in the form of mean ± SD for normally distributed data and median for non-parametric data. Results: The number of antral follicles was significantly (p<0.001) higher in the leptin-treated rats (median = 4, range = 0-6) when compared with controls (median = 0, range 0-5), irrespective of age. The weight of both ovaries of leptin-treated rats (mean 52.9 mg ± SD 6.5) was significantly (p<0.001) higher than that of the controls (mean 35.9 mg ± SD 11.4), irrespective of age. The total body weight of leptin-treated rats (27.4 g ± SD 1.8) was significantly (p<0.001) less than that of controls (34.6 g ± SD 3.9). Pearson’s correlation (r), showed a significant negative correlation between the duration of treatment and body weight (r = -0.622, p= 0.001). Conclusion: Exogenous leptin enhanced folliculogenesis, increased ovarian weight, and reduced body weight of rats. Its potential role, in obese women with impaired reproductive functions, needs to be elucidated.