

Prolactin and Its Abnormalities: Its Implications on the Male Reproductive Tract and Male Factor Infertility

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Abstract : Male factor infertility due to abnormalities in prolactin levels is encountered in a significant proportion. This was a case-control study carried out to determine the effects of prolactin abnormalities in normal males with infertility, recruiting 297 male infertile patients with informed written consent. All underwent a Basic Seminal Fluid Analysis (BSA) and endocrine profiles of FSH, LH, testosterone and prolactin (PRL) hormones using the random access chemiluminescent immunoassay method (normal range 2.5-17ng/ml). Age, weight, and height matched voluntary controls were recruited for comparison. None of the cases had anatomical, medical or surgical disorders related to infertility. Among the controls; mean age $33.2\text{yrs} \pm 5.2$, BMI $21.04 \pm 1.39\text{kgm}^{-2}$, BSA 34×106 , a number of children fathered 2 ± 1 , PRL $6.78 \pm 2.92\text{ng/ml}$. Of the 297 patients, 28 were hyperprolactinaemic while one was hypoprolactinaemic. All the hyperprolactinaemic patients had oligoasthenospermia, abnormal morphology and decreased viability. The serum testosterone levels were markedly lowered in 26 (92.86%) of the hyperprolactinaemic subjects. In the other 2 hyperprolactinaemic subjects and the single hypoprolactinaemic subject, the serum testosterone levels were normal. FSH and LH were normal in all patients. The 29 male patients with abnormalities in their serum PRL profiles were followed up for 12 months. The 28 patients suffering from hyperprolactinaemia were treated with oral bromocriptine in a dose of 2.5 mg twice daily. The hypoprolactinaemic patient defaulted treatment. From the follow-up, it was evident that 19 (67.86%) of the treated patients responded after 3 months of therapy while 4 (14.29%) showed improvement after approximately 6 months of bromocriptine therapy. One patient responded after 1 year of therapy while 2 patients showed improvements although not up to normal levels within the same period. Response to treatment was assessed by improvement in their BSA parameters. Prolactin abnormalities affect the male reproductive system and semen parameters necessitating further studies to ascertain the exact role of prolactin on the male reproductive tract. A parallel study was carried out incorporating 200 male white rats that were grouped and subjected to variations in their serum PRL levels. At the end of 100 days of treatment, these rats were subjected to morphological studies of their male reproductive tracts. Varying morphological changes depending on the levels of PRL changes induced were evident. Notable changes were arrest of spermatogenesis at the spermatid stage, a reduced testicular cellularity, a reduction in microvilli of the pseudostratified epithelial lining of the epididymis, while measurement of the tubular diameter showed a 30% reduction compared to normal tissue. There were no changes in the vas deferens, seminal vesicles, and the prostate. It is evident that both hyperprolactinaemia and hypoprolactinaemia have a direct effect on the morphology and function of the male reproductive tract. The morphological studies carried out on the groups of rats who were subjected to variations in their PRL levels could be the basis for infertility in male human beings.

Keywords : male factor infertility, morphological studies, prolactin, seminal fluid analysis

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