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Evaluation of reproductive hormone profile in relation to semen quality in male partners of subfertile couples

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The objective of the study was to assess the reproductive hormone profile of a Sri Lankan subfertile male population and to relate it to their semen parameters. Male partners of 152 subfertile couples who sought treatment at the subfertility unit of the department of Obstetrics and Gynaecology at the Faculty of Medicine, Ragama were included in the study. Serum samples were assayed for follicle stimulating hormone (FSH), luteinizing hormone (LH), prolactin (PRL), Estradiol (E2) and testosterone (T) levels, using electrochemiluminescence immunoassay (ECLIA). A semen sample was obtained from each participant on the same day. Seminal fluid analysis was done according to the WHO guidelines. The mean (SEM) of FSH, LH, PRL, E2 and T levels of the males were 5.35 (0.53) mIU/mL, 6.20 (0.33) mIU/mL, 17.53 (0.60) ng/mL, 30.48 (1.80) pg/mL and 523.80 (14.74) ng/dL and the prevalence of abnormalities of these hormones were 9.8% (n=15), 5.9% (n=9), 13.15% (n=20), 0.6% (n=1) and 2.6% (n=4) respectively. Of the study population 20.3% (n=31) men had either single or combination of hormone abnormalities. When the mean hormone levels of the men with normal semen parameters were compared with those of men with abnormal semen parameters, none showed a statistically significant difference; FSH - 4.18 (2. 78) Vs 4.58 (3.15), LH - 5.90 (2.78) Vs 5.70 (2.36), PRL - 28.63 (14.96) Vs 17.59 (7.63) and T -551.39±208.17 Vs 515.73 (158.25). Mean (SD), FSH and LH levels were significantly higher among azoospermic participants compared with normozoospermics; 19.69 (9.93) Vs 4.18 (2.78) for FSH, 12.82 (11.82) Vs 5.90 (2.78) for LH, $p<0.01$). Similarly FSH and LH levels were significantly higher in severe oligospermic participants compared with the normozoospermics; 7.58 (4.34) Vs 4.18 (2.78) for FSH, and 6.96 (2.65) Vs 5.90 (2.78) for LH, $p<0.05$). The serum FSH level showed an inverse correlation with sperm concentration ($r= -0.203$, $p<0.05$) and total sperm count ($r= -0.206$, $p<0.05$). In conclusion, an endocrinopathy was present in up to 20% of this population. Abnormalities in Gonadotrophin levels were related with azoospermia and severe oligozoospermia. Serum FSH showed a negative correlation with the sperm concentration and the total sperm count. Other hormones failed to show a significant relationship with the semen parameters in this population.

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