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JOURNAL ARTICLE

Modulation of insulin-like growth factor-1 in the seminal plasma of infertile men

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It has been suggested that insulin-like growth factor (IGF)-1 plays an important role in the regulation of spermatogenesis in the testes. In the present study, concentrations of total IGF-1 were determined in the seminal plasma of fertile (n = 44), male-factor infertile (n = 34), and immunoinfertile (n = 10) men in order to investigate the role of IGF-1 in male infertility. Levels of IGF-1 were expressed both as nanograms per milliliter and as nanograms per milligram of protein. IGF-1 was detected in the seminal plasma of both fertile and infertile men. IGF-1 levels differed significantly between fertile and immunoinfertile groups ($P < 0.035$ to $P < 0.0001$), whether expressed as nanograms per milliliter or as nanograms per milligram of protein. The immunoinfertile group showed a 31.3-37.9% increase in the mean IGF-1 concentration over the fertile group. There was no statistical difference in the mean or median levels of IGF-1 between the fertile and male-factor infertile groups, whether expressed as nanograms per milliliter or as nanograms per milligram of protein. However, when the male-factor infertile subjects were divided into four subgroups based on which seminal parameter was defective, the subgroup having a low sperm count had IGF-1 levels that were significantly different from the fertile group, the immunoinfertile subgroup, and the other male-factor infertile subgroups. The low-sperm-count subgroup had the lowest mean and median IGF-1 levels of all the groups and subgroups tested. IGF-1 levels linearly correlated ($r = 0.30$-0.499) significantly ($P = 0.023$-0.027) with the total sperm count in the semen, whether analyzed with all groups together or in subgroups by condition. These findings suggest that IGF-1 has a role in fertility and that its derangement may be involved in male infertility, especially when mediated through low sperm count and immunologic factors.

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