Older Men Have Higher Follicle-Stimulating Hormone Levels But Not Smaller Testis Compared To Younger Men

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Objective: The degenerative changes that occur in the seminiferous tubules with age include an increase in the thickness of the basement membrane and decreases in total volume of the testis occupied by seminiferous tubules and the actual length of the tubules. Decrease in daily sperm production with age is supported by calculations of mature sperm production based on the number of round spermatids in testicular tissue homogenates. Although an age-related decrease in semen quality could be predicted from the biological changes that occur in testis, this has not been demonstrated clinically. The goal of our study was to establish the presence of an aging effect on hormonal levels and testicular volume in a population of fertile men of various age groups.

Design: Retrospective study at a tertiary care center.

Materials and Methods: 889 vasectomies for voluntary sterilization purposes were included in our study from September 1999 to March 2003. The mean age was 35.04 ± 6.14 (range 24 to 63 years old). We divided our patients into five different groups according to age: Group I (24-30 years; n = 117), Group II (31-35 years; n = 166), Group III (36-40 years; n = 127), Group IV (41-45 years old; n = 59), and Group V (> 45 years; n = 31). We evaluated semen follicular-stimulating hormone (FSH), luteinizing hormone (LH), testosterone levels and testicular volume in all 5 patient groups.

Results: No differences were seen among the five groups in LH levels (3.3 ± 1.8, 3.2 ± 1.5, 3.2 ± 1.6, 3.4 ± 1.7 and 3.3 ± 1.2; \( P = 0.8821 \)) testosterone levels (583.4 ± 196.9, 576.2 ± 179.9, 576.6 ± 187.8, 545.6 ± 186.9, and 533.8 ± 193.1; \( P = 0.4092 \)), mean right testicular volume (12.82 ± 5.17, 15.27 ± 6.13, 15.14 ± 6.45, 14.23 ± 6.11, and 14.1 ± 4.54; \( P = 0.118 \)) and left testicular volume (11.7 ± 4.7, 12.7 ± 12.6, 13.8 ± 6.5, 12.2 ± 5.9, and 11.9 ± 5.4; \( P = 0.711 \)). FSH levels were different amongst the five groups (3.5 ± 2.9, 3.5 ± 2, 3.7 ± 2.4, 4.2 ± 2.4, and 4.7 ± 2; \( P < 0.0045 \)). Based on a linear regression analysis, FSH level tend to increase by 0.27% each year.

Conclusion: FSH levels tend to increase over the years, whereas no change was seen in the levels of LH, testosterone and testicular volume. Interestingly, we failed to find lower
levels of testosterone in the older group of patients - most probably due to the small sample size (men > 45 years old). Elevated FSH levels may be due to decrease in the secretion of inhibitory factors from Sertoli cells. This may be due to age related changes in seminiferous tubules. We suggest that the aging effect be taken into consideration when proposing standard values for FSH.

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