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Perspectives and Editorials: Letter to the Editor

Re: Seasonal Variation and Age-Related Changes in Human Semen Parameters

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To the Editor:

The study of seasonal variation in human semen parameters has, in our opinion, two different aspects—individual and demographic. The first refers to the consideration of each patient by an evaluation of male fertility status in the laboratory, and the second relies on basic epidemiological knowledge of how the male genital tract works. The present letter represents another milestone in the effort to better understanding these important issues.

We would like, first, to report our experience at the Andrology Laboratory of the University Clinical Hospital "José de San Martín" in Buenos Aires, Argentina. Our information was collected retrospectively on 904 semen analyses that were done in 2002. Semen samples were studied according World Health Organization (WHO) criteria (WHO, 1999); volume, pH, sperm concentration, motility, progressive motility, and morphology were assessed. Summer was defined as December, January, and February; fall as March, April, and May; winter as June, July, and August; and spring as September, October, and November. The mean temperatures in Buenos Aires are 22 °C (range, 15 °C to 28 °C), 23 °C (range, 17 °C to 30 °C), and 22 °C (range, 16 °C to 28 °C) in December, January, and February, respectively. In the population we studied, the sperm concentration expressed per ejaculate was higher during winter, although statistically significant differences were not found (by analysis of variance). In our retrieved analysis records, we could not find differences in the other parameters—those reflecting either testicular or accessory gland function—considered.

Two issues sparked our interest in the Chen et al. article: 1) their data on sperm concentration and 2) their interpretation of the higher sperm count during winter. With reference to the first item, the authors reported an average sperm concentration of 136.1 million/mL (SD, 142.0), with a range of 2.2 to 847 million/mL, with only 10.5% of the sperm counts below WHO reference values. They assessed sperm concentration by computer aided sperm analysis (CASA). We have measured sperm counts smaller than those reported by Chen et al, probably because of the different methodology used to obtain the sperm count (WHO vs. CASA) biased the results (Curi et al, 2002).

With reference to the second item, the authors stated that 1) sperm production in humans is known to decrease when the testicular temperature is raised by experimental techniques, 2) normal spermatogenesis requires a temperature 2 °C to 3 °C lower than the rectal temperature, and 3) the effect of temperature is manifested approximately 90 days after exposure. We believe that the effect of experimental increases in temperature are not comparable to the effects of environmental increases in temperature, where homeostasis plays an important role. The summer temperature is not so extreme in either Buenos Aires or Boston as to affect spermatogenesis.

In the majority of species, the annual cycle of transitions between reproductive activity and quiescence are driven by environmental signals, mainly the photoperiod. These signals ensure the arrival of young at a time when conditions are optimal for their survival. This is not the case in humans, whose reproductive functions continue throughout the year, without any major or obvious changes in different seasons (Bartke, 1995).

The environment has a complex interaction in health and disease. In human semen parameters, factors other than temperature or photoperiod seem to have a greater significance when seasonal variation is considered. Environmental influences unique to our own species, such as occupational or accidental exposure to chemicals; the use of alcohol, psychotropic drugs, of anabolic steroids; stress; lifestyle; and abstinence time during each season should be thoroughly evaluated in relation to fertility status.

References

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