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JOURNAL ARTICLE

Alterations in sperm characteristics of follicle-stimulating hormone (FSH)-immunized men are similar to those of FSH-deprived infertile male bonnet monkeys

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The quality of sperm ejaculated by bonnet monkeys and normal, healthy proven fertile volunteer men, both actively immunized with ovine follicle-stimulating hormone (oFSH), was examined at different times of study for chromatin packaging and acrosomal glycoprotein concentration by flow cytometry. Susceptibility of sperm nuclear DNA to dithiothreitol (DTT)-induced decondensation, as measured by ethidium bromide binding, was markedly high compared with values at day 0 in men and monkeys during periods when FSH antibody titer was high. Sperm chromatin structure assay yields alphat values, which is another index of chromatin packaging. Higher alphat values, signifying poor packaging, occurred in both species following immunization with heterologous pituitary FSH. The binding of fluorosceinated pisum sativum agglutinin (PSA-FITC) to acrosome of sperm of monkeys and men was significantly low, compared with values at day 0 (control) during periods when cross-reactive FSH antibody titer was high and endogenous FSH was not detectable. Blockade of FSH function in monkeys by active immunization with a recombinant oFSH receptor protein corresponding to a naturally occurring messenger RNA (mRNA) also resulted in production of sperm with similar defects in chromatin packaging and reduced acrosomal glycoprotein concentration. Thus, it appears that in monkeys and men, lack of FSH signaling results in production of sperm that exhibit defective chromatin packaging and reduction in acrosomal glycoprotein content. These characteristics are similar to that exhibited by sperm of some class of infertile men. Interestingly, these alterations in sperm quality occur well ahead of decreased sperm counts in the ejaculate.

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