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JOURNAL ARTICLE

A test of the human sperm acrosome reaction following ionophore challenge. Relationship to fertility and other seminal parameters

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Acrosome reaction capacity was tested on semen samples from 53 fertile and 26 subfertile men. Preparations were divided into two aliquots after 3 or 24 hours of culture. One aliquot received 10 $\mu\text{mol/L}$ calcium ionophore A23187 in dimethyl sulfoxide (DMSO) and the other received DMSO alone. Acrosome reactions were scored on ethanol-permeabilized smears using fluorescein isothiocyanate (FITC)-conjugated *Pisum sativum* lectin. The following factors were analyzed: the spontaneous reaction rates (control); induced reaction rates (ionophore-challenged); and the difference between the two, being the proportion of spermatozoa in the population capable of reacting in response to calcium influx (acrosome reaction to ionophore challenge [ARIC]). While spontaneous reactions bore no relation to fertility, induced reactions and ARICs were significantly reduced or absent in subfertile men, indicating acrosomal dysfunction as a likely cause of fertilization failure. The test was shown to have a predictive value for fertility comparable to that of the hamster ovum sperm penetration assay and to be a simple and cost-effective addition to existing semenology.

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