**Effect of pentoxifylline containing human sperm cryopreservation medium on post-thaw motility of human spermatozoa and lipid peroxidation status of human semen**

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Objective: The process of freeze-thawing impairs sperm motility and membrane integrity and results in an overall loss of sperm fertilizing ability. The damage occurs mostly by the production of reactive oxygen species. Pentoxifylline acts as a potent motility activator by inhibiting the phosphodiesterase activity as well as an antioxidant. The present study was carried out to assess the effect of pentoxifylline containing human sperm cryopreservation medium (egg-yolk, glucose, fructose, glycine containing and glycerol based medium where the effective concentration of glycerol in medium-semen mixture is 7.5% (V/V)) on human sperm motility, forward progression and lipid peroxidation status of frozen thawed semen. Design: Prospective experimental study. Materials and Methods: A final concentration of 3.6 mM pentoxifylline/L of medium-semen mixture was selected for this study. A comparative study between both the media (the Human Sperm Cryopreservation Medium [HSPM] alone and the HSPM containing 7.2 mM pentoxifylline/L of medium) was carried out in 26 normozoospermic human semen samples from patients attending the University clinic. After preliminary analysis, each semen sample was divided into 2 aliquots, each of 300 µL and one was mixed with the medium (M) alone and the other with the pentoxifylline containing medium (Mp), both in 1:1 dilution and preserved at -196ºC in liquid nitrogen for 1 week. The motility characteristics were assessed and lipid peroxidation status was estimated by malonaldehyde (MDA) formation in both the media preserved spermatozoa on thawing and it was compared with that of pre-freeze ones. Results: The mean percentage (± SD) motility was 66.9 ± 15.2 % in pre-freeze samples; it was 31.3 ± 17.0% (p < 0.005) and 46.2 ± 19.4% (p > 0.07) after thawing in spermatozoa preserved in medium M and Mp respectively. The mean percentage (± SD) of 5% forward progression was 56.6 ± 16.4 % in pre-freeze samples; it declined to 21.8 ± 16.9% (p < 0.005) and 37.3 ± 20.9% (p > 0.01) on thawing in sperm preserved in medium M and Mp, respectively. The lipid peroxidation of whole semen was 22.6 ± 11.9 nM in pre-freeze condition and increased to 43.0 ±11.3 (p < 0.01) in samples preserved in medium M and 30.6 ± 15.8 (p > 0.3) nM of MDA/ml of semen in samples preserved in Mp. Conclusion: The addition of
pentoxifylline with sperm cryopreservation medium not only provides a comparatively higher yield of spermatozoa with % motility and forward progression on thawing but also minimizes the lipid peroxidation of sperm membrane on cryopreservation. Hence, pentoxifylline could be used as a supplement in human sperm cryopreservation medium.

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