Journal of Andrology, Vol 6, Issue 4 225-229, Copyright © 1985 by The American Society of Andrology

JOURNAL ARTICLE

Effects of AMSA, an antineoplastic agent, on spermatogenesis in the mouse

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The stages of spermatogenic cells killed by the single and fractionated administration of AMSA, an acridine derivative used in cancer chemotherapy, have been identified in the mouse. A wide range of doses, up to a total of 30 mg/kg, which is the LD50 for AMSA given in three daily injections, was employed. Survival of differentiating (types A1 through Intermediate) and stem spermatogonia was measured by sperm counts performed 29 and 56 days after treatment, respectively. The sensitivity of germ cells to AMSA at other stages of differentiation was determined by semiquantitative histologic analysis at 11 days after treatment. Significant killing of differentiating spermatogonia, types A2 through B, but only minor killing of stem cells and no toxicity to post-spermatogonial stages were observed with all treatment schedules. This pattern of differential sensitivity can explain the temporary azoospermia observed in man during AMSA treatment, which was followed by a return to normal sperm counts after cessation of therapy.