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Metallothionein Expression in Mouse Testis after Busulfan Treatment

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Objective: To evaluate histological change and expression pattern of metallothionein during spermatogenesis in mouse testis after busulfan treatment

Design: Controlled experimental laboratory study

Material and Methods: Experimental group of male ICR mice was treated with a single I.P. injection of 40 mg busulfan/kg of body weight. Control group received a single injection of 0.2 ml of a mixture of dimethyl sulphoxide (DMSO) and saline. Mouse testis of experimental group were collected on day 1 to day 70 after busulfan treatment and control group on day 43. The tissues were prepared for light microscopy and immunohistochemistry to metallothionein (MT).

Result(s): By busulfan treatment, the ratio of testis to body weight was decreased gradually to 6 weeks, after that the ratio increased gradually. In histological observation of experimental group, spermatogonia, spermatocytes and spermatids in seminiferous tubules, gradually disappeared to 4 weeks. However, few spermatozoa were continuously observed and located toward basement membrane of tubules. Partial proliferation and spermatogenesis appeared after 5 weeks of busulfan treatment. In immunohistochemical study, MT were expressed in proliferating spermatogonia and spermatocytes of control and experimental group. MT expression was gradually decreased in experimental group until 4 weeks after treatment. Interestingly, we observed recurrence of spermatogonia and expression of MT in experimental group after 5 weeks of the

busulfan injection.

Conclusion(s): Base on our results, busulfan seems to be affect on proliferation of spermatogonia, but not on differentation process of spermatogenesis. The MT was expressed in proliferating male germ cells. The busulfan treated males may be showed failure of spermatogenesis, however, they have a potency of spermatogenesis after recovery time. We suggests that MT have a relationship with the proliferation of male germ cells and recurrence of spermatogenesis.