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Rapid Communication

Splenic ablation by percutaneous injection of ethanolamine oleate in dogs: A possible therapy for hypersplenism

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In order to evaluate a possible therapy for hypersplenism, we performed an animal experiment consisting of percutaneous injections of ethanolamine oleate (EO) into the spleen.

In 9 mongrel dogs, the spleen was punctured under US-guidance, and 0.6 mg/kg body weight of 5% EO was injected each time. The injection was performed three times at intervals of one week. Three dogs each were sacrificed at 1, 4 and 8 weeks after the final injection.

All dogs tolerated the procedures well and lived until the designated time of sacrifice. Two dogs showed slight elevation of GOT and GPT following the injections, but the values returned to the preinjection levels within 2 weeks. The white blood cell count increased to more than 100% above the pretreatment level a week after the injections, and, although it gradually decreased, remained higher than the pretreatment level until 8 weeks. Hemoglobin values slightly increased a week after the injections, but gradually returned to the pretreatment level. Platelet increased from $26.4 \pm 7.8 \times 10^4/mm^3$ of the pretreatment level to $35.0 \pm 8.0 \times 10^4/mm^3$ at a week after the final injection ($P<0.05$) and did not decline by the time of sacrifice. At autopsy a week after the final injection, the injected areas showed a swollen and dark red appearance. Histological examination demonstrated hemorrhagic infarction with complete destruction of the structure. At 8 weeks, the injected areas were slightly shrunken. Fibrosis was shown in these areas. The weight of the areas with these changes accounts for approximately 40% of the entire spleen. At autopsy a week after the final injection, microscopic examination of the liver occasionally revealed thrombis in peripheral portal veins and dilatation of the surrounding portal veins. There was, however, no damage in the liver parenchymal tissue. No other abnormal findings were observed in abdominal and thoracic organs.

In conclusion, the injection of 5% EO destroyed a considerable amount of the splenic tissue and produced hematologic changes compatible with depressed splenic function. No serious complications occurred. Percutaneous injection of EO may be a simple and effective therapy for hypersplenism.

Key words: hypersplenism, percutaneous injection

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