Study on the efficacy of a gossypol acetate-loaded intrauterine contraceptive device on experimental adenomyosis

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Introduction Adenomyosis is a common condition among women in their reproductive years. The common presenting symptoms are painful and heavy periods and infertility. Medical treatment for adenomyosis range from local treatments such as intrauterine devices (IUDs) to systemic preparations of gonadotrophinreleasing hormone (GnRH) analogues. The curative effect of gossypol acetate in the treatment of endometriosis is sure, but because of its by severe hypokalemia and have not been able to get promotion in clinical treatment.The aim of the study is to evaluate the therapeutic efficacy and safety of a gossypol acetate-loaded intrauterine contraceptive device (IUCD) treatment for experimental adenomyosis. Methods Four months after adenomyosis animal models were successfully established using Institute for Cancer Research, Swiss-derived (ICR) mice that were grafted with a single pituitary gland. The IUCDs with three different quantities of gossypol acetate were prepared and used to treat the ICR mice with adenomyosis. After 2 months of treatment with a gossypol acetate-loaded IUCD, the number of adenomyosis nodules and the hematoxylin-eosin staining scores were measured and compared with mice given daily oral gossypol acetate and controls (no adenomyosis). .Results As the gossypol acetate dose increased, the nodule number and the hematoxylin-eosin staining scores decreased, and both reached statistical significance at a dose of 0.2 mg per 20 g body weight ($P<0.05$). In addition, the plasma gossypol acetate concentrations with IUCD delivery were low and stable as compared with oral administration, Conclusions These results suggest that an IUCD loaded with an appropriate dose of gossypol acetate may be an effective treatment for adenomyosis and that human trials may be warranted.

Keywords : Gossypol acetate; adenomyosis; mouse; animal model; intrauterine contraceptive device
Authors :
References : , , ,

Authors

Zhu Libo 1, Qiu Lin 2, Zhang Xinmei 1,

1. Gynecology, Women's Hospital, Zhejiang University School of Medicine, Hangzhou, CHINA
2. Gynecology, The affiliated Hospital of Hangzhou Normal University, Hangzhou, CHINA

Authors (raw format)

Libo Zhu - email : zhulibo8751@126.com Institution : Women's Hospital, Zhejiang University School of Medicine Department : Gynecology City : Hangzhou Country : CHINA Speaker : Yes
Lin Qiu - email : qiulin1997@163.com Institution : The affiliated Hospital of Hangzhou Normal University Department : Gynecology City : Hangzhou Country : CHINA Speaker : No
Xinmei Zhang - email : zxm20130729@163.com Institution : Women's Hospital, Zhejiang University School of Medicine Department : Gynecology City : Hangzhou Country : CHINA Speaker : No