

Application of vitamin A may be benefit to preventing male infertility and testicular cancer in cryptorchidism

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Abstract: We presume that in addition to hormone therapy and operation of orchiopexy at proper age, application of vitamin A to patients with cryptorchidism at the age of 2~3 months and 4~5 years may be benefit to preventing male infertility and testicular cancer by promoting the spermatogonia differentiation and initiating meiosis.

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Cryptorchidism is the most common genital malformation in boys, which occurs in approximately 3%~4% at birth and 1% at one year of age because of spontaneous descent, little to no spontaneous descent occurs after six months of age [1]. The undescended testis is known to be associated with an increased risk of male infertility and testicular neoplasia [2]. Hormonal and/or surgical treatments are recommended at early stage, even before one year of age. Although some believe that early orchiopexy may be beneficial in preventing infertility[3], the efficiency is still controversial. And early treatment is agreed not to lessen the risk of malignancy[4]. What's more, there is evidence that treatment is often delayed [5]. Undesended testes fail in two major steps of spermatogenesis: the differentiation stage from spermatogonial stem cell to Ad type spermatogonia which normally occurs at 2~3 months of age and the process of meiosis which normally occurs at 4~5 years of age [6]. We believe that the failure in proper differentiation of spermatogenic cells results in male infertility and the disturbance of proliferation / differentiation balance results in tumorigenesis.

Vitamin A is required for normal spermatogenesis. Retinoic acid, the active metabolite of vitamin A, is necessary for spermatogonial maturation and proper entry of germ cells into meiotic prophase in the post-natal testes [7,8]. Retinoids is also used in treatment of

tumors, such as breast cancer, lung cancer, carcinoma of stomach, and leukemia.

We presume that in addition to hormone therapy and operation of orchiopexy at proper age, application of vitamin A to patients with cryptorchidism at the age of 2~3 months and 4~5 years may be benefit to preventing male infertility and testicular cancer by promoting the spermatogonia differentiation and initiating meiosis.

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