



Risk Factors for Hypogonadism in Patients with β -Thalassemia Major : A Cross-sectional study

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Objective Hypogonadism is one of the most common endocrine complications in patients with β -thalassemia major (β -TM), but its epidemiological data is currently lacking in China. The purpose of this study was to investigate hypogonadism in β -TM patients in a single-center and to analyze its clinical characteristics as well as to analyze risk factors affecting hypogonadism.

Method A total of 42 β -TM patients aged ≥ 10 years old were evaluated for their stages of puberty development by reviewing follow-up data (using the REDCAP system, the thalassemia follow-up database), questionnaire, physical examination and laboratory tests. Logistic regression analysis was used to analyze the independent risk factors for hypogonadism in β -TM patients.

Result The age of 42 β -TM patients ranged from 10.92 to 30.33 years old. The ratio of male to female was 1.33:1. The three most common endocrine complications in 42 β -TM patients were hypogonadism, vitamin D deficiency and short stature, whose prevalence rates were 57.14%, 59.52% and 57.14% , respectively. The prevalence rate of hypogonadism was significantly higher in β -TM patients who had $\beta^0\beta^0$ genotype , a history of splenectomy, vitamin D deficiency or diabetes . The result of logistic regression analysis indicated that cardiac T2* < 20 ms was an independent risk factor for abnormal puberty development in β -TM patients. SF was significantly negatively correlated with FSH and LH , meanwhile , cardiac T2* and hepatic T2* were significantly positively correlated with FSH and LH, indicating that iron overload maybe an important pathogenesis of hypogonadotropic hypogonadism in β -TM patients.

Conclusion Hypogonadism was one of the most common endocrine complications in β -TM patients and the prevalence rate was 57.14%, and there was no difference between male and female. The common clinical manifestations of β -TM patients with hypogonadism were primary amenorrhea for female and short penis and small testicles for male. The beginning age of iron chelation, cardiac T2*, genotype, liver function, vitamin D deficiency and diabetes were influencing factors for hypogonadism in β -TM patients. The logistic regression analysis showed that cardiac T2* < 20 ms was an independent risk factor for hypogonadism in β -TM patients. Iron overload causing hypogonadotropic hypogonadism maybe an important pathogenesis of hypogonadism in β -TM patients.

