Background: β-thalassemia major is among the most common genetic disorders in Iran. Blood transfusion, as the main stem of management of these patients, has numerous side effects including iron overload. Delayed puberty as a major complication of these patients is multifactorial but seems to be mainly secondary to iron deposition within pituitary gland. This study was designed to compare pituitary MRI signal changes in thalasemia patients with and without delayed puberty.

Methods: From β-thalassemia patients, 27 cases between 15-25 years were included, 13 with delayed and 14 with normal puberty (according to clinical exam). Pituitary MRI was done, then signal and dimensions of gland was determined and compared by statistical analysis between two groups.

Finding: Decreased signal of any degree was detected in 93% of patients. Normal signal and also mild and moderate hyposignality showed no significant difference between two groups (P = 0.317, 0.083, and 0.655, respectively), but severe hyposignality was higher in delayed puberty group (P = 0.034). Also, decreased volume and height of gland was significantly higher among delayed puberty group (P = 0.002 and 0.006 respectively).

Conclusion: MRI could be appropriate for diagnosis of delayed puberty in patients with β-thalassemia.