

## Abstract

**Introduction:** Thalassaemia is a genetic disorder of haemoglobin synthesis characterised by life-long chronic anaemia. Although the endocrine and cardiac complications of thalassaemia are well-studied, hepatic and renal complications are understudied.

**Objectives:** This study aims to describe the hepatic and renal functions and to understand their determinants among paediatric patients with  $\beta$ -thalassaemia.

**Methods:** A cross-sectional descriptive study was conducted at Kurunegala and Ragama thalassaemia centres during March 2023. All haematologically confirmed  $\beta$ -thalassaemia patients aged 1-16 years attending the study sites were recruited. Data were collected by interviewing parents and patients, performing physical examinations, and perusing clinical records. Ethical approval was obtained from the Sri Lanka College of Paediatricians.

**Results:** Seventy-two children (female- 52.8%) were recruited. The mean age was 7.3 years (SD: 3.8). A majority [44 (61.1%)] had  $\beta$ -thalassaemia major, while 22 (30.6%) had haemoglobin E  $\beta$ -thalassaemia. Fifty-five children (76.4%) were transfusion dependent. Hepatomegaly was found in 47 (65.3%), while 28 (38.9%) had elevations of both alanine and aspartate transaminases. Haemoglobin E  $\beta$ -thalassaemia type (OR: 13.6, 95%CI: 2.0-92,  $p=0.008$ ) and high ferritin above 1000 ng/mL (OR: 6.2, 95%CI: 1.0-38,  $p=0.047$ ) were independent factors associated with high transaminases. Eleven (15.5%) patients had an estimated glomerular filtration rate (eGFR) below 90 mL/min. The proportion of children with low eGFR was higher in  $\beta$ -thalassaemia major (23.3%), transfusion-dependent (18.5%) and deferasirox treatment (18.5%) groups.

**Conclusions:** Elevation of hepatic transaminases is common among children with thalassaemia, especially among the subset of patients with haemoglobin E  $\beta$ -thalassaemia and those with high ferritin. Milder reductions in eGFR are noted in some patients with transfusion-dependent  $\beta$ -thalassaemia major.

**Keywords:** Thalassaemia; Hepatic transaminases; Glomerular filtration rate; Alanine transaminases; Aspartate transaminases