Increased Serum Heat Shock Protein 27 Antibody Titers and Prooxidant-Antioxidant Balance in Patients with Beta-Thalassemia Major

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**Introduction**

Thalassemia is a genetic disorder characterized by a relative or complete lack of α- or β-globin chains that affects more than 90 million people throughout the world [1, 2]. β-Thalassemia syndrome is characterized primarily by chronic ineffective erythropoiesis and anemia which requires lifelong blood transfusions and involves a variety of complications associated with iron overload, nutritional deficiencies and chronic oxidative stress [3–5].

It is known that iron overload and increased oxidative stress in β-thalassemia lead to organ toxicity, including that of the cardiovascular system, impaired endothelial relaxation, intimal thickening, abnormal vascular stiffening and degeneration [5–10]. Although iron chelation therapy has significantly improved the prognosis, cardiac complications remain one of the primary causes of mortality and a major cause of morbidity in these patients [9].

Oxidative stress occurs when the generation of reactive oxygen species and other radical species exceeds the scavenging capacity of antioxidants [11]. Oxidative stress has been implicated in the pathogenesis of cardiovascular and atherosclerotic disorders, cancer, rheumatoid arthritis and aging [12]. Superoxide dismutase (SOD) is an en-

**Key Words**

Heat shock protein 27 • Oxidative stress • Thalassemia • Prooxidant-antioxidant balance • Superoxide dismutase activity

**Abstract**

**Objective:** Determination of the serum heat shock protein 27 (Hsp27) antibody titers and prooxidant-antioxidant balance (PAB) in patients with thalassemia as markers of cell and oxidative stress, respectively. **Methods:** Serum PAB and anti-Hsp27 antibody titers were measured in 140 patients with thalassemia major and 140 sex- and age-matched healthy volunteers. **Results:** A significantly higher serum PAB value was observed in patients in comparison to controls. In the patient group, anti-Hsp27 antibody titers were significantly higher than for the control group (p < 0.001). We found a weak negative correlation between anti-Hsp27 antibody concentrations and the PAB (p = 0.03), but these values were not correlated with serum superoxide dismutase activity in the thalassemic patients. **Conclusions:** Increased levels of serum PAB and Hsp27 antibodies may be involved in the pathological consequences of β-thalassemia major and may contribute to the development of endothelial injury.

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0001–5792/12/0001–0000$38.00/0

Accessible online at:
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Received: November 7, 2011
Accepted after revision: May 9, 2012
Published online: ■■■■