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Refractory vasculitic ulcer of the toe in adolescent suffering from Systemic Lupus Erythematosus treated successfully with hyperbaric oxygen therapy

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Abstract

Skin ulcers are a dangerous and uncommon complication of vasculitis. We describe the case of a teenager suffering from Systemic Lupus Erythematosus with digital ulcer resistant to conventional therapy, treated successfully with Hyperbaric Oxygen Therapy. The application of hyperbaric oxygen, which is used for the treatment of ischemic ulcers, is an effective and safe therapeutic option in patients with ischemic vasculitic ulcers in combination with immunosuppressive drugs. Further studies are needed to evaluate its role as primary therapy for this group of patients.

Introduction

Vasculitis is a heterogeneous group of diseases characterized by inflammatory processes of the blood vessel wall resulting in the alteration of blood flow and vascular damage. The vessels involved are of different sizes (arteries, arterioles, venules, capillaries). Resulting syndromes are the consequence of tissue ischemia, vascular damage and systemic inflammation. Most vasculitis is mediated by the vascular deposition of immune complexes (IC), abnormal cell-mediated immune responses, antibodies against endothelial cells or against lysosomal enzymes of neutrophils. Vasculitis may be primary or secondary to connective tissue and intestinal diseases, medications, tumors or athopy. Vasculitic skin ulcers are clinical manifestations of ischemic injury, and are usually treated medically by controlling the underlying disease with immunosuppressants and systemic vasodilators [1]. Hyperbaric oxygen therapy (HBOT) is used as primary or adjuvant therapy in various clinical conditions, including cutaneous vasculitic ulcers that are resistant to immunosuppressive therapy [2]. We present a case of refractory vasculitic ulcer responding to hyperbaric oxygen (HBO), which was used in combination with immunosuppressive therapy. We decided to treat the infected ulcer of the patient with HBOT not only because it improves the oxygenation of ischemic tissues and exerts beneficial effects on vascular inflammatory response by regulating the chemotaxis of leukocytes, but also because it facilitates the healing process of infected wounds promoting the deposition of collagen, angiogenesis, epithelialization and facilitating the oxygen-dependent killing by leukocytes.

Case report

In mid February 2008 a 14 year old girl came under our observation. She had been suffering for about 3 months from persistent fever (38 ° C), weight loss (9 kilos), headache and asthenia and was previously treated with several courses of antibiotics and prednisone. Family history shows that her paternal grandmother suffers from scleroderma, her paternal grandfather from rheumatoid arthritis, her maternal grandmother from autoimmune thrombocytopenia, and her mother from thyroiditis. At admission, she had a body weight of 45 kg (10^{th} -25^{th} percentile) and a height of 154 cm (10^{th} -25^{th} percentile). Physical examination revealed a rash on the face, livedo reticularis, acrocyanosis at the first and second toe of the left foot, arthritis in knees and ankles. Blood tests showed: anemia (hemoglobin 10.5 gr/dl), leukocitopenia (3300/μl) with lymphopenia (30%), normal platelet count (289000/μl), increased inflammatory indexes (erythrocyte sedimentation rate 53 mm/1 hour; C-reactive protein 1,44 mg/dl); increased serum IgG (2270 mg/dl), lengthening of prothrombin time (57.5 seconds), reduced serum iron

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