Neuropathic pain in patients with sickle cell disease: a cross-sectional study assessing teens and young adults

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Received: 20 January 2017 / Accepted: 23 March 2017

Abstract Chronic pain conditions are little studied and may be underestimated in sickle cell disease (SCD). The aim of this study was to identify the occurrence and characteristics of neuropathic pain (NP) in SCD patients. A sample of 56 patients was chosen from a total of 554 patients submitted to the inclusion criteria between 2015 and 2016. The Leeds assessment of neuropathic symptoms and signs scale was used for detecting NP. The groups with and without NP were compared by sex, age, use of hydroxyurea, and sensory changes through Chi-square, Fisher's exact, ANOVA, and Kruskal-Wallis tests. The average age was 20.6 years (SD ± 4.6), 51.8% of the patients were male, and 14 patients (25%) suffered from NP. Most commonly, the pain was reported to be in the lower back area (53.6%). Age was positively related to NP: the average age in the group with NP was 22.7 years (SD ± 4.1) and in the group without NP was 19.8 years (SD ± 4.5), $p < 0.05$. Higher rates of NP occurred in patients aged 19 years or older, compared with that in teens ($p < 0.01$). There was a positive association between NP and the use of hydroxyurea ($p < 0.05$). An association was found between NP and sensitive neurological changes ($p < 0.01$). Therefore, screening for NP may result in faster and more effective diagnoses and consequently initiate appropriate treatment.

Keywords Sickle cell · Chronic pain · Neuropathic pain · Hydroxyurea

Perspective
This article presents a proposal to simplify the evaluation of neuropathic pain in patients with sickle cell disease with the help of a questionnaire, greatly speeding up diagnosis and, consequently, access to the appropriate treatment.

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Introduction

Pain is the most frequent complication associated with symptomatic forms of sickle cell disease (SCD) [1]. Furthermore, episodes of acute pain in SCD patients vary with an average of one to three episodes per year, with spontaneous resolution after some variable periods of time [2, 3].

Pain may not be directly related to tissue injury and it may be a different acute form manifesting itself as a continuous and persistent sensation associated with hyperalgesia (severe pain) and allodynia (pain sensation following a non-painful stimuli), deriving from central or peripheral nervous sensitization mechanisms [4]. Chronic pain (CP) in SCD, besides raising treatment costs, can also increase patient morbidity due to common and severe clinical complications. Neurological or psychiatric changes, such as sleep disorders, depression, and anxiety, can be present among patients with CP [5].

Neuropathic pain (NP), CP's form, is a direct consequence of damage to the somatosensory system [6]. It is estimated that about 7–8% of patients in Europe have NP [7, 8]. A previous study found that 20% of SCD patients suffer from NP, being more prevalent in women and people of higher age [9]. The neurobiological mechanisms that trigger NP are still poorly understood. Questions remain with regard to what the best

Published online: 30 March 2017