Ultrasonography findings in nasal bone fracture; 6-month follow-up: can we estimate time of trauma?

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Abstract

Differentiation of a recent nasal bone fracture from an old one may become of utmost importance, especially in medico-legal issues. The aim of this study was to demonstrate the value of high-resolution ultrasonography (HRUS) in determining the time of nasal bone fracture. A longitudinal, descriptive-analytic study was done on 45 patients with a clinical manifestation of acute unilateral nasal bone fracture. After a thorough rhinologic physical examination, HRUS was performed by an expert consultant who was blinded to the clinical data of the patients. All patients were followed-up for 6 months: in the first 5 days, 3rd, 6th, 12th and 24th weeks after the trauma. In each session, the ultrasonographic findings were recorded. Thirty-six cases (mean age, 27 years) completed the study course successfully. On HRUS, subperiosteal hematoma, with a mean thickness of 1.14 mm (0.79-1.31 mm) was highly sensitive (100 %) for the diagnosis of nasal bone fracture during the first few days after the trauma, but it was present in 13 cases in the 6th week, with a mean thickness of 0.71 mm (0.62-0.80 mm), and disappeared in all patients in the 24th week, with a mean thickness of 0.47 mm (almost equal to the non-traumatic side). According to the changes of subperiosteal reaction on the traumatic side and by means of generalized linear model and generalized estimating equations, we proposed an equation to estimate the time of nasal bone trauma. In conclusion, HRUS is a reliable diagnostic tool for estimating the time of nasal bone fracture.

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