Effectiveness of Ultrasonography in Diagnosis of Maxillary Sinus Disease: a Prospective Comparison with Radiographic and Sinusoscopic Examinations

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Aim. To assess the diagnostic accuracy of ultrasonography in comparison to radiographic and sinusoscopic techniques of maxillary sinuses examinations in acute and chronic sinus inflammations.

Methods. Ninety diseased sinuses in 50 patients (32 male and 18 female) were examined radiographically, ultrasonographically, and sinusoscopically. Ultrasonography was performed with Sinuscan 102 Sinusprint with 3.0 MHz transducer frequency, with A-mode curve display and Bulk-display. Radiography was performed in occipitonasofrontal and occipitonasomental projection, and sinusoscopy by local anesthesia using an optic instrument under 0°, 30°, and 70°. Statistical assessment of ultrasonography sensitivity and specificity in relation to radiographic and sinusoscopic techniques was carried out. The data were compared using McNemar’s test for paired data.

Results. Negative ultrasonographic agreed with negative radiographic findings in 18 of 20 sinuses. When ultrasonographic findings revealed mucosal thickening, complete filling, polyp or cyst, the agreements with radiographic findings were 24/30, 21/25, and 11/15, respectively. Negative ultrasonography agreed with negative sinusoscopic findings in 17/20 sinuses. When ultrasonographic findings revealed mucosal thickening, complete filling, polyp or cyst of the maxillary sinuses, the agreements with sinusoscopic findings were 26/30, 23/25, and 13/15, respectively. In comparison to radiological findings, the sensitivity of ultrasonography was 0.93 and specificity 0.60, and in comparison to sinusoscopic examination, sensitivity of ultrasonography was 0.93 and specificity 0.74.

Conclusions. Ultrasonography can be used as a diagnostic method in the early diagnosis of sinus diseases. Compared to radiographic and sinusoscopic findings, it shows a high agreement in negative and positive findings, i.e., a high sensitivity and specificity.

Key words: cysts; maxillary sinus; polyps; radiography; ultrasonography

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