Maxillomandibular versus Hands Roentgenographs in the Evaluation of Renal Osteodystrophy

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Dear Sir,

Maxwell et al. [1] compared the sensitivity of maxillomandibular and hands versus skeletal roentgenograms as screening techniques for evaluating bone disease in uremic patients. They examined the four following radiological findings: cortical or medullary bone loss, subperiosteal bone resorption, destructive lesions, extraosseous calcifications. They found that it was 'a rapid, sensitive, specific method for evaluating bone disease and its treatment in patients with chronic renal failure and it had a high yield equivalent to roentgenographs of the hands'. The authors concluded that this method deserved wider application in clinical use.

We use radiography of the hands to detect bone lesions of renal osteodystrophy. This technique is widely applied in the clinical route: the radiological findings detected are described, scored and positively compared with the degree of hyperparathyroidism [2–4].

We have confronted the sensitivity of maxillomandibular versus hands roentgenograms in 15 hemodialyzed patients (9 male, 6 female, mean age 58, range 42–79, hemodialytical mean age 58 months, range 2–103). Patients affected by intraoral pathology were excluded from the study. A panoramic roentgenograph including the mandibular ramus and condyles (OPT) and a posterior-anterior view of each hand using a mammographic film were performed in each patient. A control group was selected from normal subjects who performed OPT for screening evaluation. This control group was obtained to compare only OPT.

Serum calcium, phosphorus, alkaline phosphatase and parathyroid hormone were determined in uremic patients. The OPT was taken on 3M film, 75 kW, 300 mA; the hands roentgenogram was obtained using 3M mammographic film, 50 kW and 500 mA. The radiographs were examined with a hands lens by 2 examiners without knowledge of the subjects. The hands roentgenographs were examined and scored according to Ritz et al. [2] and Jensen and Kliger [4].

We did not use the technique employed by Maxwell et al. [1], which included 14 periapical exposures besides panoramic roentgenograph, because it was not easily feasible. Further, the amount of radiations absorbed by the skin is considerably larger during periapical exposures than during OPT.

Our results suggest that OPT is the less sensitive technique than hands roentgenograms to detect radiological features of renal osteodystrophy. In fact subperiosteal bone resorption was the only finding detected by OPT. It appeared as a patchy resorption of cortical bone delineating the

mandibular canal or its incomplete image. The lamina dura was not detected and the maxillary sinus did not show erosions. The density of the bone was decreased in uremic patients without a characteristic pattern; we believe that age and sex can influence this abnormality.

The examinations of the hands films confirmed the correlation between radiological findings and degree of hyperparathyroidism. In particular acro-osteolysis appeared the most frequent findings of bone resorption as already reported by other authors [2, 3], and it was reliably recognized.

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In conclusion, our opinion is that the skeletal changes of the jaw characterizing the local involvement of renal osteodystrophy are limited by possible misinterpretations if the dental roentgenograms are performed by conventional technique. Moreover the method proposed by Maxwell et al. [1] is very expensive and not recommended for routine use.

Radiography of the hands remains the method of choice for evaluating the onset and the follow-up of renal osteodystrophy.

References

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