DYNAMICS OF THE ALKALINE PHOSPHATHASE BONE ISOENZYM CONTENT IN BLOOD SERUM IN PATIENTS WITH UNCOMPLICATED MANDIBULAR FRACTURES

S.V. Ushtan, L.Ye.Lapovets, V.M.Akimova, N.Ye.Lapovets, M.P.Zaletskyi, Kh.R.Pohranychna
Danylo Halytsky Lviv National Medical University, Ukraine

Development of informative modern methods of diagnosing complications and bone remodeling processes in case of mandibular fractures is an actual direction of dentistry.

Materials and Methods. 50 patients with uncomplicated fractures of the ramus and mandibular body were examined. Determination of bone isoenzymes of alkaline phosphatase (BIAP) rate in blood serum of patients was performed on 1, 7, 14 and 21 days after the fracture. The content of BIAP was determined by immune enzyme method using “VSM Diagnostics” set.

Results. Comparative dynamic analysis of the BIAP activity of patients revealed significant differences. Activity of BIAP in blood serum in patients with uncomplicated fractures of the mandible is significantly higher than that of healthy individuals. On the 1st day – by 199% (p <0,05), on 7th day - by 180% (p <0,05), on the 14th day - by 158% (p <0,05), on the 21st day - by 46% (p <0,05) in comparison with healthy ones. On the 7th day the activity of BIAP in the blood serum of patients was significantly lowered by 6% from the previous level, on the 14 day the activity of the isoenzymes continued to decrease - by 8%, on the 21st day activity decreased by 43.5% from the previous level. The obtained results demonstrate that activity of isoenzymes decreases in the dynamics of treatment and on the 21st day of observation their activity reduces by 50% in comparison with the first day (p <0,05). In bone tissue, alkaline phospha-
tase is synthesized by osteoblasts and their precursors and is involved in the mineralization of the bone matrix. Therefore, bone alkaline phosphatase is more specific marker of bone formation than general phosphatase. In patients with uncomplicated fractures of the mandible, an initial osseous callus is formed on average for 14 days. The processes of bone remodeling are active from 1 to 14 days after the jaw fracture, and is accompanied by high BIAP activity during this period. On the 21st day a tendency to normalizing of isoenzymes activity is observed. The quantitative determination of BIAP provides important information about bone remodeling in case of bone fractures and promising for diagnosis of complications.

References:


Key words: mandibular fractures, bone isoenzymes of alkaline phosphatase.

Accepted for printing on 29 Oct 2017