

THE ROLE OF MULTIMODAL ANALGESIA IN THE TREATMENT OF PATIENTS WITH DISTAL METAPHYSEAL FRACTURES OF THE RADIUS AT THE OUTPATIENT STAGE

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Abstract. *Fractures of the distal metaphysis of the radius (typical radial fractures) are quite common, especially in elderly people. The results of treatment for such patients remain unsatisfactory. One of the most serious complications of a fracture of the radius in a typical location is the development of post-traumatic neurodystrophic syndrome. A promising direction for the prevention of possible complications is the use of multimodal analgesia. In all 63 observations during the first three days in all cases of distal metaphyseal fracture of the radius, the pain syndrome was neuropathic in nature. For local anaesthesia, a 2% solution of lidocaine in a volume of 10-15-20 ml was used. It was injected into the hematoma of the radial fracture after identifying the location of the needle in it. The exposure was at least 5-10 minutes, until the effect of complete anaesthesia was achieved. Dexamolgin® was administered intramuscularly. The injectable form of the drug was prescribed for short-term treatment of moderate to severe pain in the perioperative*

period, followed by a switch to the tablet form. No rough manipulations were performed. After aligning the fragments in a position of slight stretching and slight flexion or extension of the wrist, the fragments were fixed with plastic bandages. After 2 weeks, if necessary, the hand was gradually brought to a neutral physiological position. After 4-6 weeks, following X-ray control, the bandage was removed and further active rehabilitation treatment was carried out.

The proposed multimodal analgesia with Dexalgin® in patients with distal metaphyseal fractures of the radius in the early outpatient stage was justified and effective. Fifty-two patients (82.5%) highly rated the treatment results, describing pain as tolerable and the function of the injured arm as satisfactory, with a score of 33.2 ± 0.4 on the DASH scale.

Key words: multimodal analgesia, fracture of the distal metaphysis of the radius.

Relevance of the problem. Distal metaphysis fracture of the radius (DMFR, fracture of the radius in a typical location) is quite common, especially in elderly people. The vast majority of patients are treated conservatively for a number of objective reasons. The results of treatment for such patients remain unsatisfactory in 30% of cases [1, 2, 3]. This is due to a number of reasons. The short distal fragment of the fracture complicates repositioning and maintaining the corrected position. The technique of manual repositioning followed by fixation of the fragments with a splint does not exclude the possibility of secondary displacement of the fracture.

One of the serious complications of a fracture of the radius in a typical location is the development of post-traumatic neuro-dystrophic syndrome. Risk factors for its development include gender, age, and concomitant diseases. The trigger for the development of DMFR is pain syndrome. Tension in the forearm muscles leads to additional tissue trauma and increases the risk of complications. Severe pain syndrome leads to neurogenic vasoconstriction of blood vessels, dilation of precapillary sphincters, microvessels, especially venules, and tissue oedema. Therefore, a promising direction for the prevention of possible complications is

multimodal analgesia, low-trauma correction, rational fixation of fragments, and drug therapy at an early outpatient stage.

The aim of the study is to determine the effectiveness of the proposed multimodal analgesia in patients with fractures of the distal metaphysis of the radius.

Materials and methods. We monitored 63 patients with fractures of the distal metaphysis of the radius. Most of them were women (43 - 68.3%). Thirty-eight patients (60.4%) were over 55 years of age. In this group of patients, Kolesa fractures were found in 49 cases, and Smith fractures in 14 (77.8% and 22.2%, respectively). Women constituted the vast majority (52 - 82.5%). Unstable fractures requiring surgical treatment and crack-type fractures were not analysed. In all cases, displacement correction was performed, followed by fixation with a plastic (14 - 22.2%) or plaster (49 - 82.5%) bandage. The patient was given a preliminary explanation of all the upcoming procedures. 2% lidocaine solution in a volume of 10-15-20 ml was used for local anaesthesia. It was injected into the hematoma of the radius fracture after identifying the location of the needle in it. The exposure was at least 5-10 minutes, until the effect of complete anaesthesia was achieved. Dexalgin® was administered intramuscularly. The injectable form of the drug was prescribed for short-term treatment of moderate to severe pain in the perioperative period, followed by a switch to the tablet form.

The integral indicator of pain is its subjective assessment by the patient. There are many aspects and ways of measuring its intensity. The most comprehensive and convenient method in clinical practice for patients with fractures of the radius in a typical location is the visual analogue scale (VAS), which ranges from no pain to unbearable pain. Patients were instructed to assess their sensations according to the following principles. On a scale 10 cm (100 mm) long, the level of pain intensity is marked with a dot. The starting point indicates no pain - 0, followed by mild pain, moderate pain, severe pain and the end point - unbearable pain - 10. Despite its apparent simplicity, the VAS is widely used in clinical practice and is generally recognised by clinicians.

DN4 - a questionnaire used to diagnose neuropathic pain. During the interview, questions were asked to characterise the pain as neuropathic. For a subjective, standardised assessment of hand function, a specific questionnaire was used: DASH - Disability of the Arm, Shoulder and Hand Outcome Measure. Questionnaire on the results and disability of the arm and hand. In 2005, it underwent a process of cross-cultural adaptation into., and the is available on the Ukrainian -language version website of the Institute of Labour and Health (Canada) - <http://www.dash.iwh.on.ca>. The main section of the DASH questionnaire (incapacity/symptom scale) consists of 30 questions related to the condition of the hand over the past week. Each question has 5 answer options, rated on a scale of 1 to 5. The total score for all items is then converted to a 100-point scale. Thus, DASH assesses upper limb disability from 0 (no disability, good function) to 100 (severe disability). The interactive scale is available at <https://sites.google.com/site/71microsurgery/vopros-vracu/dash>

In 59 observations during the first three days in patients with fractures of the radius in a typical location, the pain syndrome was neuropathic (of varying severity). This was due to anatomical predisposition. The carpal tunnel is a narrow tunnel formed by the bones of the wrist and the transverse ligament of the wrist. Median nerve neuropathy in fractures of the radius in a typical location consists of trauma and compression of the median nerve in the canal cavity. Therefore, adequate multimodal analgesia was very important in the prevention of post-traumatic neurodystrophic syndrome in the early stages. This was achieved by the following methods.

A 2% solution of lidocaine (15-20 ml) was injected into the fracture hematoma, and reduction was performed no earlier than 5 minutes later. The non-steroidal anti-inflammatory drug was used (intramuscular injection of Dexalgin® 15-20 minutes before reduction). Subsequently, in the acute period (up to 3-7 days), patients received Dexalgin® in tablet form. The choice of drug was due to the following reasons. It is one of the most optimal drugs in the NSAID class - it has a high safety profile, especially in elderly patients; strong analgesic and anti-inflammatory effects.

Adjunctive therapy included the use of Ca and vitamin D3 preparations (CaD3 Nikomed, 1 tablet twice a day for 30 days), B vitamins (Neurobion, Duovit), alpha-

lipoic acid antioxidants or Actovegin. The use of the polypeptide Keltican was a mandatory component. The drug, containing cytidine monophosphate and uridine monophosphate, is indicated for the treatment of neuropathic pain in peripheral nervous system damage. It improves axonal and neuronal regeneration. It was taken 1 to 3 times a day for 2-3 weeks. Prolonged, damped, vertical traction of the fragments was performed with increasing force.

Traction did not cause painful sensations and was rated by patients at 3.8 ± 0.09 points on the VAS scale (pain that is easily tolerated). No rough manipulations were performed. After aligning the fragments in a position of slight stretching and slight flexion or extension of the wrist, the fragments were fixed with plastic bandages. After 2 weeks, if necessary, the wrist was gradually brought to a neutral physiological position. After 4-6 weeks, following Ro-control, the bandage was removed and further active restorative treatment was carried out. A short bandage with Scotch tape to the metacarpophalangeal joints holds the fracture of the distal metaphysis of the radius well and allows movement of the fingers from the first day. On the second day after the injury, patients began physical therapy of the fingers in 1 period, and physiotherapy procedures were performed, including UHF and magnetotherapy.

Results obtained and their discussion.

In all 63 patients, a neuropathic component of pain syndrome was determined upon admission based on VAS scores. The vast majority of victims (48 - 76.1%) rated the repositioning of fragments as painless, and only 15 (23.9%) reported unpleasant sensations (4.3 ± 0.21 points on the VAS - moderate pain). Within 4 days after admission, the victims noted a decrease in pain intensity from 7.42 ± 0.31 to 2.4 ± 0.12 points on days 7 and 14 according to the VAS (satisfactory pain tolerance). The same indicators remained until the end of immobilisation. We believe that these results were achieved through multimodal analgesia using Dexalgin®. The results of treatment of 63 patients were evaluated dynamically up to 30 days after injury. After rehabilitation treatment, 52-82.5% of patients rated their pain as minor and tolerable (2.4 ± 0.24 points). In 9-7.5% of patients, the pain syndrome became chronic ($5.2 \pm$

0.6 points). There were contractures of the fingers and radiocarpal joint. Significant neuropathic pain syndrome persisted. Two patients had pronounced neurotrophic and functional disorders, which subsequently required long-term conservative treatment.

When patients were surveyed using the DASH scale, the function of the injured arm was determined to be satisfactory (33.2 ± 0.41 points) in 52 (82.5%) of the victims, sufficient for self-care without heavy physical exertion. In 2 (3.2%) there were pronounced neurotrophic and functional disorders - the result was unsatisfactory.

Conclusions.

1. In all observations during the first three days in all cases of FDME of the radius, the pain syndrome was neuropathic in nature.

2. The proposed multimodal analgesia with Dexalgin® in patients with FDME of the radius at the early outpatient stage was justified and effective.

3. Fifty-two patients (82.5%) highly rated the results of treatment, describing pain as tolerable and the function of the injured arm as satisfactory, with a score of 33.2 ± 0.4 on the DASH scale.

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