Dose Effect of Local Betamethasone Injection in Low Back Pain

ABU AWWAD AHMED[1], RADU PREJBEANU[1], DINU VERMESAN[1], BOGDAN DELEANU[1], MARIUS IONITESCU[1], SORIN FLORESCU[1], CRISTINA DALIBORCA VLAD[2]*, VICTOR DUMITRASCU[2]

[1]Victor Babes University of Medicine and Pharmacy, Department of Orthopedics and Trauma,2 Eftimie Murgu Sq, 300723, Timisoara, Romania

[2] Victor Babes University of Medicine and Pharmacy, Department of Pharmacology, 2 Eftimie Murgu Sq., 300723, Timisoara, Romania

The purpose of the study is to show the effects and evolution of patients with back pain treated with a different dose of betamethasone, analyzing both their evolution in terms of pain perception and lifestyle. In this study, 43 patients diagnosed with back pain in the lumbar region were included over a 12-month period. Patients were divided into two categories, depending on the dose of betamethasone administered. At 1 month control after the last injection, the first group of patients, a total of 22, given the local injection of betamethasone, trigger point injection, administering the usual dose: 1 ampoule of betamethasone 1 mL + 1 ampoule 1% xyline, at the clinical examination, they claimed that pain was reduced by about 70%, sustaining the improvement of the quality of life. The same group of patients, called for the final evaluation, at 3 month, claimed the pain was reduced by about 95%, as compared to the initial pain before starting the treatment. In the second category, where 21 patients were treated by local injections, trigger point injection, administering the modified dose of betamethasone: ½ ampoule of betanethasone 0.5 mL + 1 ampule 1% xyline, at 1 month control after the last injection, at the clinical examination they claimed thtat the pain was reduced with just 40%, sustaining an average quality of life. Even if a low dose of betamethasone shows significantly less systemic effects, a higher dose is required in the treatment of low back pain to have the desired effect and to significantly improve the quality of life of the patient.

Keywords: low back pain, betamethasone, steroid injection, trigger point

One of the pathologies that has grown continuously on an annual basis, both because of the lifestyle and the pressure to which the area is constantly exposed in everyday life, is the lumbar pathology, having as central symptom the back pain.

As we age, bone strength and muscle elasticity decrease. Intervertebral discs dehydrate and lose out of flexibility, which reduces the damping role they have between vertebrae [1].

Low lumbar pain indicates the presence of a muscular irritation, a nervous irritation, or a bone lesion. Most low back pain is secondary to a trauma to the back, but pain can also be caused by multiple degenerative conditions [2, 3].

Approximately 80% of the adult population of the globe accuses back pain at some point in their life. men and women being equally affected. The age at which this condition is most common is between 30 and 50 years, due to the aging process and sedentary lifestyle. The risk of low lumbar pain due to discogenic cause or spine degeneration increases with age [4, 5].

The purpose of the study is to demonstrate whether there is a difference in the treatment of lumbar pain, depending on the dose of betamethasone administered injectable (trigger point therapy). The central treatment of the patients in this study consisted of injections of betamethasone. The selected dose of betamethasone is different depending on the target groups.

Experimental part

In this prospective study, 43 patients diagnosed with back pain in the lumbar region were included over a 12-month period. This study aims to determine whether a lower dose of betamethasone has the same effect as a normal dose.

Forty-three people were included in this study, representing patients treated in the Emergency Clinical County Hospital Pius Brinzeu, Timisoara from January 2017 to December 2018. Patients enrolled in the study were diagnosed with Acute Lumbar Pain and were consequently treated according to current guidelines.

Inclusion criteria were:

-Age between 18 and 75 years old

-Patients without history of spinal surgery

-Patients with lumbar pain not of less than 3 months

-Patients without a history of treatment with betamethasone in the last 3 months

-Patients with no history of allergy to betamethasone or other adjacent substances

-Patients with lumbar pain that did not work with physiokineto therapeutic treatment.

The exclusion criteria:

-Patients with fractures, or acquired deformities of the lumbar spine,

-Endocrine or metabolic disorders: poorly controlled diabetes with advanced neuropathy and / or angiopathy,

-Infectious or febrile conditions,

-Pregnancy and lactation;

-History of spine surgery

-Severe respiratory and cardiovascular conditions

-Lumbar pain following trauma

All patients included in this study were clinically evaluated based on the criteria of the Japanese Orthopedic Society for Lombalgia Assessment - JOABPS [6, 7].

Patients were divided into two categories.

In the first category, a total of 22 patients were given the local injection of betamethasone, trigger point injection, administering the usual dose: 1 ampoule of betamethasone 1 mL + 1 ampoule 1% xyline.

* email: dalivlad@yahoo.com; Phone: +40745384087

In the second category, 21 patients were treated by local injections, trigger point injection, administering the modified dose of betamethasone: ½ ampoule of betanethasone 0.5 mL + 1 ampule 1% xyline.

Both groups of patients included in the study were given two injections at weekly intervals.

The first group received the usual dose of betamethasone and the second group received the modified dose of betamethasone.

The 43 patients were then called to control 1 month after the last injection, followed by control for the final evaluation at 3 months from the last injection.

The study was conducted in accordance with local ethics guidelines and was approved by the Ethics Commission of the County Emergency Clinical Hospital Pius Brinzeu Timisoara.

Results and discussions

In this study, 43 patients were examined clinically and treated with local injection, trigger point injection, the mean age being 47.28 years (18 to 65 years) and the gender distribution: 26 men (60.45%) and 17 (39.55%) women.

At 1 month control after the last injection, the first group of patients, a total of 22, given the local injection of betamethasone, trigger point injection, administering the usual dose: 1 ampoule of betamethasone 1 mL + 1 ampoule 1% xyline, at the clinical examination, they claimed that pain was reduced by about 70%, sustaining the improvement of the quality of life.

The same group of patients, called for the final evaluation, at 3 month, claimed the pain was reduced by about 95%, as compared to the initial pain before starting the treatment.

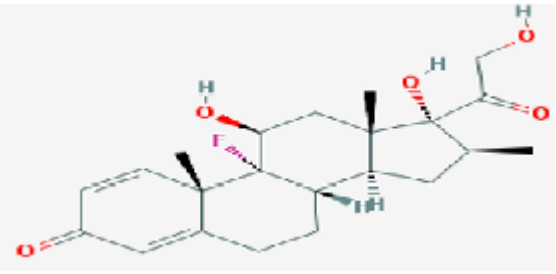
In the second category, where 21 patients were treated by local injections, trigger point injection, administering the modified dose of betamethasone: ½ ampoule of betanethasone 0.5 mL + 1 ampule 1% xyline, at 1 month control after the last injection, at the clinical examination they claimed thtat the pain was reduced with just 40%, sustaining an average quality of life.

At the final evaluation, at 3 month, 90% of 21 patients, claimed the pain was reduced by 65%, as compared to the initial pain before starting the treatment, still maintaining an average quality of life in terms of lumbar discomfort.

The purpose of this research is to demonstrate whether a lower dose of betamethasone has the same effect as a normal dose but with less systemic effects. Several musculoscheletal conditions lack a treatment consensous [8-13]. It is known that betamethasone is a corticosteroid medication with strong systemic effects, which is why a low dose may improve or reduce some of these systemic effects [14, 15].

The molecular formula for betamethasone: $C_{22}H_{29}FO_5$

The side effects of betamethasone are sililar to those of corticosteroid therapy. It is important to note that these effects are closely related to the dose and duration of the therapy used [17, 18].



Betamethasone molecular formula [16]

Some of the most serious side effects are musculoskeletal: articular instability caused by repeated intra-articular injections, vertebral fractures by compression, muscle weakness, cortisone myopathy, muscle hypotrophy; osteoporosis; aseptic necrosis of the femoral and humeral head; pathological fracture of long bones; tendon rupture [19, 20].

Conclusions

Although the effects of betamethasone are biologically important, orthopedic treatment with this substance shows a real success in solving orthopedic pathologies especially in the pathology of low back pain [21].

Even if a low dose of betamethasone shows significantly less systemic effects, a higher dose is required in the treatment of low back pain to have the desired effect and to significantly improve the quality of life of the patient.

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