CASE REPORT

Topic 4% lidocaine for occupational therapy of patients with complex regional pain syndrome. Case reports*

Uso da lidocaína tópica a 4% para terapia ocupacional em pacientes com síndrome dolorosa complexa regional. Relato de casos

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SUMMARY

BACKGROUND AND OBJECTIVES: Complex regional pain syndrome (CRPS) is a central nervous system disorder with sympathetic dysfunction. Its pathophysiology is not clear. There is peripheral inflammation and hypoxia. Pain distresses patients. These case reports aimed at evaluating topic 4% lidocaine during occupational therapy of outpatients with CRPS.

CASE REPORTS: Participated in this study five patients aged above 18 years, with upper limb CRPS types I and II, who were evaluated in six visits with an interval of seven days. In the first, they were medicated with gabapentin and in the other five the dose was increased. As from the second visit, topic 4% lidocaine was applied approximately 30 minutes before rehabilitation exercises. Four patients had CRPS type I. In decreasing order, referred symptoms were: sting, burning, allodynia, shock and paresthesia. All patients had edema and motor dysfunction. Topic 4% lidocaine allowed patients to perform the exercises proposed by the occupational therapist, in outpatient regimen, with significant pain intensity improvement.

CONCLUSION: Topic 4% lidocaine allowed rehabilitation with significant pain intensity improvement.

Keywords: Complex regional pain syndrome, Local anesthetics, Occupational therapy.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A síndrome dolorosa complexa regional (SDCR) é uma desordem do sistema nervoso central com disfunção simpática. Sua fisiopatologia não está esclarecida. Perifericamente há inflamação e hipóxia. A dor traz angustia para o paciente. O objetivo deste estudo foi relatar e avaliar o uso da lidocaína tópica a 4% durante a terapia ocupacional em pacientes ambulatoriais com SDCR.

RELATO DOS CASOS: Foram estudados 5 pacientes, com idades acima de 18 anos, com SDCR tipo I e II de membro superior, avaliados em 6 consultas, com intervalos de 7 dias entre elas. Na primeira eram medicados com gabapentina e nas 5 posteriores a dose era aumentada. A partir da segunda consulta era utilizada lidocaína a 4% tópica cerca de 30 minutos antes da realização dos exercícios de reabilitação do membro. Em 4 pacientes a SDCR era do tipo I. Em ordem decrescente os sintomas referidos foram: fisgada, queimação, alodínia, choque e parestesia. Todos os pacientes apresentavam edema e

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disfunção motora. Com a lidocaína tópica a 4% foi possível a realização dos exercícios orientados pelo terapeuta ocupacional, em regime ambulatorial, ocorrendo redução significativa da intensidade da dor.
CONCLUSÃO: A lidocaína tópica a 4% permitiu a realização da reabilitação ocorrendo redução significativa da intensidade da dor.
Descritores: Anestésico local, Síndrome dolorosa complexa regional, Terapia ocupacional.

INTRODUCTION

Complex regional pain syndrome (CRPS) is a central nervous system disorder with sympathetic dysfunction[1]. Its pathophysiology is not clear. Patients refer pain in the affected limb, allodynia, hyperalgesia, autonomic and trophic changes, loss of function, inflammation and hypoxia[2,3].
CRPS is divided in two types: type I, when there is no nervous injury and previously called reflex sympathetic dystrophy, and type II, when there is nervous injury and previously called causalgia. There is no specific treatment algorithm, being necessary a multimode, multidisciplinary and multiprofessional therapeutic approach.
Treatment alternatives are: antidepressants, anticonvulsants, local anesthetics, sympathetic blocks, vitamin C and opioids, among others. The participation of anesthesiologists, psychiatrists, occupational therapists (OT), physical therapists, nurses and psychologists is important[4]. Desensitization with brushing techniques is also used, so that the affected limb may be handled and released for exercises proposed by OT or physical therapists aiming at returning the limb to its normal function. Isometric strengthening, stress load and aerobic conditioning are important. Several therapeutic proposals have been used, however few have been effective[3].
This study aimed at reporting and evaluating the use of topic 4% lidocaine before occupational therapy in outpatients with CRPS.

CASE REPORTS

Participated in this study 5 patients of the Pain Treatment Services, aged above 18 years with upper limb CRPS types I and II.
Four patients had CRPS type I and 3 patients were hypertensive under anti-hypertensive medication. CRPS causes were: right distal radius fracture; injury of right thumb extensor tendon and of the right hand flexor tendons, ulnar and median nerve; left radius and ulna fracture and left hand trauma caused by pantographic door.
There has been predominance of the sting symptom, followed by burning, allodynia, shock and paresthesia. Motor dysfunction and edema were present in all patients and all had an attitude of defense and fear of moving the affected limb. Sweating was present in 2 patients, edema in all patients, 3 patients had hyperemia and 2 presented cyanosis. Limb temperature was increased in 3 patients and decreased in 2.
Pain intensity was evaluated by visual analog scale (VAS) in the following moments: T_0 – in the beginning of the evaluation; T_{30} – 30 minutes after beginning of activities carried out by OT and T_{60} – at the end of the evaluation. This scale measures pain in scores from zero to 10, being zero (no pain) and 10 (the worst possible pain).
Patients were evaluated in six visits with 7-day intervals. The first visit confirmed CRPS diagnosis and prescribed 300 mg of oral gabapentin at night. One patient was already under routine use of 25 mg amitriptyline, a tricyclic antidepressant. Then, patients were referred to OT to be oriented on how to use topic 4% lidocaine protecting application site with plastic to favor absorption and decrease anesthetic dispersion.
In the next five visits pain intensity was evaluated (T_0), 4% lidocaine was applied, occupational therapy was performed and pain was again evaluated 30 minutes after (T_{30}). At the end of the visit pain was once more evaluated (T_{60}).
Friedman's test for ordinal evaluation of score-dependent k was used for statistical analysis and Dunns test was used to show significant differences between two samples, within visits and between evaluations in moments T_0, T_{30} and T_{60}, considering significant $p < 0.05$.
As from the third visit sweating has decreased and was not detected during last visit. There has been edema decrease in the last visit. Hyperemia was less intense in the last visit for all patients, however cyanosis has remained in one patient and limb temperature which was increased in 3 patients has returned to normal; however, it remained decreased in 1 of 2 patients where it was decreased (Ghaph 1).
With regard to drugs, 4 patients received gabapentin in doses varying from 300 to 900 mg/day and one patient received pregabalin in doses varying from 75 to 125 mg/day, because he was sleepy with gabapentin. Only one patient used amitriptyline.
Pain intensity was significantly decreased ($p < 0.05$) in all patients between the first and the fifth visit, when moments T_0 and T_{60} were compared. In moment T_{30}, all patients had increased pain intensity in the five visits, however without statistical significance (Table 1).

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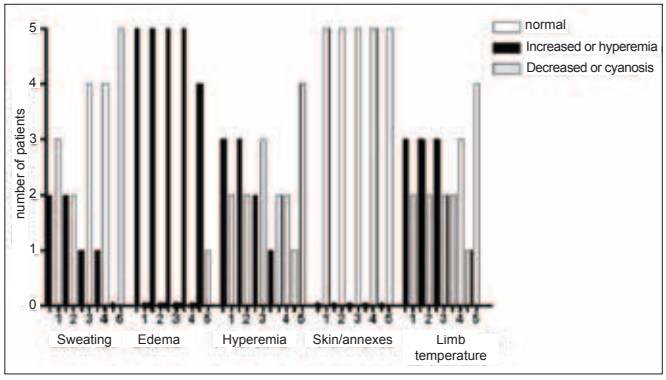

Graph 1 – Changes in sweating, edema, hyperemia, skin/annexes and temperature of the limb during five evaluations.

Table 1 – Pain intensity in moments T0, T30 and T60

Patients	Moments	Pain Intensity		
		Minimum	Median	Maximum
		5	6	8
1	T_{30}	8	9	9
	T_{60}	5	6	8
	T_0	5	5	8
2	T_{30}	8	8	9
	T_{60}	4	4	7
	T_0	6	5	6
3	T_{30}	4	7	8
	T_{60}	2	4	7
	T_0	7.5	4	6
4	T_{30}	3	6	8
	T_{60}	1	4	6
	T_0	8	4	6
5	T_{30}	2	7	8
	T_{60}	1	3	6

DISCUSSION

CRPS is a progressive disease interfering with quality of life of patients due to pain and incapacity, which imposes distress to patients and to the multiprofessional team. In general, CRPS is triggered by a physical injury such as: fractures, torsions and surgeries. With regard to diagnosis, the International Association for the Study of Pain (IASP) has published a consensus, in 1994, where the following criteria were defined: a) continuous pain disproportional to the initial event; b) presence of initial injury may be disregarded; c) signs and symptoms shall be divided in different groups; d) patients must have at least two of the following symptoms: sensory such as hyperesthesia, vasomotor such as change in temperature and color, sudomotor such as edema and sweating, and motor such as decreased motricity, weakness, shivering, functional limb amputation, or all; e) presence of at least two of the following signs: vasomotor, sudomotor and motor[2,3].

Treatment has to be started early to allow patients' recovery, however in some situations the approach is ineffective and unsuccessful.

In a study where patients had mean age of 41 years there has been predominance of females in a ratio of 3:1, only one limb was affected and causes were: 65% trauma with fracture, 19% after surgery, 4% after venous puncture and 2% after inflammation[5]. In our group of 5 patients, mean age was 59 years with predominance of males with CRPS in one upper limb and the major cause was fracture with immobilization.

Treatment is multidisciplinary involving psychologists for cognitive behavioral treatment, physical therapists to orient exercises, occupational therapists for return to labor activities, anesthesiologists to induce blockades, psychiatrists to treat psychosocial disorders, in addition to nurses and dietitians, among others[2,3].

There are several alternatives to treat CRPS: 1) sympathetic block[2,6] of stellate ganglion with local anesthetics, however there may be numerous complications, such as vertebral or carotid artery puncture, subarachnoid space injection, pneumothorax and brachial plexus injury. All procedures should be carried out by an anesthesiologist in the operating center for patients' safety; 2) anticonvulsants such as gabapentin or pregabalin; 3) opioid anesthetics such as tramadol; 4) tricyclic antidepressants such as amitriptyline and imipramine; nonsteroid anti-inflammatory drugs and steroids; 6) antioxidants such as vitamin C; 7) zoledronic acid; 8) 5% topic lidocaine patch[1-3].

Topic 4% cream lidocaine was used for our group of patients 30 minutes before OT action. There has been pain increase in moment T_{30}, however it allowed the exercises to be done. However, in moment T_{60} there has been pain intensity decrease.

As to frequency of signs and symptoms reported by the literature, there is predominance of burning, although some authors describe them as deep, excruciating and hot. Pain may be triggered by physical contact (allodynia), temperature changes and stress. Vasomotor changes are manifested as differences in temperature and color.

Edema intensity varies from mild to severe. Trophic skin and phaneros may be present or not. Sweating or anhi-

drosis are sudomotor disorders. CRPS motor disorders are: weakness, dystonia, muscle spasm, shivering, increased tone and difficulty to move. Physiological limb amputation may occur without nervous change[2]. The results of this group of patients confirm literature data.

Herpes zoster has been treated with 5% lidocaine patch[7,8]. Cream 4% lidocaine was used for our group of patients. This technique has advantages for patients because it is not invasive and occupational therapy exercises may be carried out in outpatient settings, decreasing risks for patients and institutional costs. Lidocaine may cause sleepiness, dysarthria, dysphoria, dizziness, nausea, tinnitus and headache. These complaints were not reported by the patients of our study group. No heart monitoring was made, which is mandatory when venous lidocaine is used.

OT reports increased pain intensity, suggesting that a longer period may be necessary, probably 60 minutes, between lidocaine application and beginning of occupational therapy exercises, since in moment T_{60} there has been pain intensity decrease after the occupation therapy activity.

CONCLUSION

Cream lidocaine has allowed patients to perform exercises oriented by the occupational therapists in the outpatient setting. This technique may be used as alternative to brachial plexus block.

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