https://doi.org/10.18593/evid.34519

CUTANEOUS ALLODYNIA IS ALREADY PRESENT IN YOUNG ADULTS WITH HEADACHE ALODÍNIA CUTÂNEA JÁ ESTÁ PRESENTE EM ADULTOS JOVENS COM CEFALEIA

Alodinia cutânea já se encontra presente em jovens adultos com cefaleia

Cirlane de Maria da Silva Sousa[1*]; José Francisco dos Santos Júnior[2]; Rodrigo Sousa Andrade[3]; Geovanna Cristina Pereira Alves[4]; Thayllane Costa Cardoso[5]; Almir Dibai Filho[6]; Adriana Sousa Rêgo[7]; Maria Cláudia Gonçalves[8]

Abstract: Introduction: Cutaneous Allodynia (CA) is a painful response to a non-nociceptive stimulus, which is considered a marker of central sensitization. **Objective:** To evaluate the frequency of CA in individuals with and without headache. **Materials and Methods:** Volunteers of both sexes, aged 18 to 30 years, with and without headache participated. Those with abuse of analgesics and anesthetic block in the last three months were excluded. A questionnaire with general data prepared by the author himself, the Headache Screening Questionnaire (HSQ) for headache diagnosis and the 12 item Allodynia were applied. Symptom Checklist/Brazil (ASC-12/Brazil) to assess the severity of CA. Quantitative variables were described by mean and standard deviation and qualitative variables were presented in frequency. **Results:** 60 individuals were evaluated, with n=30 in the headache group, with a mean age, weight and height of 23.06±4.97 years, 62.02±13.09 kg and 1.62±0.05 m ^{2}, respectively, where n=19 (64%) with migraine and n=11 (36%) with tension-type headache (TTH); n=30 in the control group with a mean age, weight and height of 22.03±0.09 years, 58.55±11.85 kg and 1.63±3.09, respectively. A higher frequency of CA was observed in the headache group compared to the control group n=28 (93.33%) and n=7 (26%), respectively, with the most frequent severity in the headache and control groups being mild and moderate, respectively, greater severity was also observed in those with migraine compared to those with TTH. **Conclusion:** Young adult individuals with headache have a higher frequency and severity of CA compared to individuals without headache.
Keywords: allodynia ; headache; pain.

Resumo: Introdução: Alodínia Cutânea (AC) é uma resposta dolorosa perante a um estímulo não nociceptivo, esta é considerada um marcador de sensibilização central. **Objetivo:** Avaliar a frequência da AC em indivíduos com cefaleia e sem cefaleia. **Materiais e Métodos:** Participaram voluntários de ambos os sexos, com idade de 18 a 30 anos, com Cefaleia e sem Cefaleia. Foram excluídos aqueles com abuso de analgésicos, bloqueio anestésico nos últimos três meses. Foi aplicado um questionário com dados gerais elaborado pelo próprio autor, , foi aplicado o Questionário de Triagem de Cefaleia (HSQ) para diagnóstico da cefaleia e o 12 item Allodynia Symptom Checklist/Brasil (ASC-12/Brasil) para avaliar a severidade da AC. As variáveis quantitativas foram descritas por média e desvio padrão e as qualitativas serão apresentadas em frequência. **Resultados:** foram avaliados um total de 60 indivíduos, n=30 grupo com cefaleia, com média de idade, peso e altura, de 23,06±4,97 anos, 62,02±13,09 kg e 1,62±0,05 m$^{2.}$ respectivamente, n=19 (64%) com migrânea e n=11 (36%) com Cefaleia do tipo tensão (CTT), n=30 grupo controle com média de idade, peso e

[1] Graduanda em Fisioterapia pela Universidade Ceuma, Campus Renascença, São Luís – MA, Brasil; e-mail: scirlane421@gmail.com, ORCID: https://orcid.org/0000-0003-0032-4315. *Autor correspondente : scirlane421@gmail.com

[2] Graduanda em Fisioterapia, Universidade ceuma, campus Renascença, São Luís-MA, Brasil; e-mail: juniorjfsantos04@gmail.com, ORCID: https://orcid.org/0009 0005 4792 6753

[3] Graduando em Fisioterapia pela Universidade Ceuma, Campus Renascença, São Luís – MA, Brasil; e-mail: rodrigosousa155@hotmail.com, ORCID: https://orcid.org/0009-0008-5632-4289

[4] Graduanda em Fisioterapia pela Universidade Ceuma, Campus Renascença, São Luís – MA, Brasil; e-mail: alvesgeovanna098@gmail.com, ORCID: https://orcid.org/0009-0003-3330-7228

[5] Graduanda em Fisioterapia pela Universidade Ceuma, Campus Renascença, São Luís – MA, Brasil; e-mail: thayllanecardoso410@gmail.com, ORCID: https://orcid.org/0009-0002-9394-2891

[6] Doutor, Centro de Estudos Superiores de Maceió, Maceió – AL, Brasil; e-mail: almir.dibai@ufma.br, ORCID: http://orcid.org/0000-0001-5403-8248

[7] Doutora, Universidade Ceuma, Campus Renascença, São Luís – MA, Brasil; e-mail: adricefs@yahoo.com.br, ORCID: https://orcid.org/0000-0002-2494-030X

[8] Doutora, Universidade Ceuma, Campus Renascença, São Luís – MA, Brasil; e-mail: mcgfisio0@gmail.com, ORCID: https://orcid.org/0000-0001-6457-2794

altura de, 22,03±0,09 anos, 58,55±11,85 kg e 1,63±3,09, respectivamente. Foi observada maior frequência de AC no grupo com cefaleia em relação ao controle n= 28 (93,33%) e n= 7 (26%) respectivamente, sendo que a severidade mais frequente no grupo cefaleia e controle foi leve e moderada respectivamente, também foi observada maior severidade naqueles com migrânea em relação aos com CTT. **Conclusão:** Indivíduos adultos jovens com cefaleia apresentam maior frequência e severidade de AC em relação aos indivíduos sem cefaleia.

Palavras-chave: Alodínia; Cefaleia; Dor.

Recebido em 16 de janeiro de 2024
Aceito em 27 de março de 2024

INTRODUCTION

Headache is one of the most frequent painful manifestations in humanity, like other pains, it works as a warning sign that can be interpreted differently in each individual, it will be felt at some point in life, by almost all people, half of them of adults in the world have experienced or will experience at least one headache attack (WORLD HEALTH ORGANIZATION 2016).

Given this scenario, the interest in the subject and the constant search for relief and better understanding of the damage caused by headaches have made them a public health problem, since they are debilitating disorders and sometimes make routine actions impossible, which causes a great personal and social impact, has become the most common neurological symptom and a very frequent medical complaint, involving people of all regions, ages and races (WORLD HEALTH ORGANIZATION 2016).

For Silva Junior et al., (2012) Headache is a universal symptom and it is estimated that 95% of men and 99% of women will have at least one episode throughout their lives, of which around 40% present it with A certain regularity manifests itself predominantly in women, in a proportion of three women for every two men, a fact probably resulting from hormonal modulation factors, its manifestation begins in adolescence, reaching its peak around the third decade of life (CHEBANI, 2021).

According to Chebani (2021), the World Health Organization (WHO), in its International Classification of Headache Disorders, defines headaches as primary (such as migraine, tension-type and trigeminal-autonomic headache), secondary headaches (such as cervicogenic) and painful cranial neuropathies. The primary ones have their origin in the segment itself, not resulting from other pathologies, while the secondary ones are only symptoms resulting from structural pathologies.

Regarding migraine , it is a recurrent primary headache that lasts between 4h and 72h, located unilaterally in the head, of a pulsatile type, of moderate to severe intensity, aggravated by routine physical activity and associated with symptoms such as nausea and/or photophobia and phonophobia. Two of these characteristics are sufficient to meet the diagnostic criteria (WORLD HEALTH ORGANIZATION 2016).

Individuals with migraine may present various cervical musculoskeletal dysfunctions, such as decreased range of movement (FERRACINI et al, 2017). And decreased pressure pain threshold as well as cutaneous allodynia (BENATTO et al., 2017).

Allodynia (CA) is a painful response to a stimulus that normally does not cause pain, stimuli that would not be painful in a normal situation, manifesting as discomfort, unilateral or bilateral, during routine activities such as combing hair, wearing glasses or washing the head (STUGINSKI- BARBOSA, PORPORATTI, CONTI, 2017). Individuals with allodynia present symptoms that involve pain or discomfort in response to ineffective thermal (heat or cold) and/or mechanical (static or dynamic) stimuli applied to normal skin (CAROD-ARTAL 2012).

Considered as a risk factor for chronic diseases, AC is present in approximately 80% of patients with migraine , with a higher prevalence among women (BENATTO et al 2017). However, Gomes (2012) addresses in his study that allodynia is not specific to migraine and can be found in patients with tension-type headache, cluster headache or trigeminal neuralgia.

The concepts covered in this research tend to expand knowledge about the various information collected on the different aspects of allodynia , as it is extremely important

to know the particularities of this symptom. As one of its peculiarities is that its prevalence is higher in people suffering from headache, based on this information, the objective of this study was to evaluate the frequency of CA in individuals with headache and without headache.

MATERIALS AND METHODS

Study design, setting and participants

This is a field research study, of a transversal, analytical nature, with young adults of both sexes aged 18 to 30 years, who were in good general health, participated in this study, and those who had abused analgesics, anesthetic block in the last three months, and those who were diagnosed with other chronic diseases in addition to headache that could interfere with the results of the study. The collections were carried out at the Universidade Ceuma campus Renascença, located in the city of São Luís – MA.

Data collection procedures

Initially, a questionnaire prepared by the author himself was applied with general data such as gender, age, weight, height, address, telephone number, education, place of birth, profession.

To assess headache symptoms, the Headache Screening Questionnaire (HSQ) was applied. The HSQ is a validated instrument, translated from Dutch into Portuguese and is highly reliable for identifying symptoms of migraine and tension-type headache (TTH), in clinical and research environments. It presents accurate information regarding episodic or chronic migraine attacks and TTH as frequent, infrequent or chronic. It consists of ten items with two algorithms to calculate each patient's individual score; one for migraine and the other for CTH. Both scores range from 0 to 8 points, the result is given when reaching a score equal to 6 or 7, the patient is classified as probable migraine or probable TTH, through the algorithm that is being scored, if the score is equivalent to 8 classifies positive screening for migraine or TTH (LOPES et al., 2022).

To assess the presence and severity of allodynia, the questionnaire translated and validated into Portuguese, 12 items Allodynia, was used. Symptom Checklist/Brazil (ASC-12/Brazil), which has 12 questions with the possible answers: does not apply to me, rarely, never and no: 0 points; sometimes no and sometimes yes: 1 point; most of the time: 2 points. The questionnaire classifies the individual as: no allodynia (0-2), mild allodynia (3-5), moderate allodynia (6-8) and severe allodynia (9 or more).

Data analysis

Quantitative variables were described by mean and standard deviation (mean ± SD) and qualitative variables will be presented in frequency.

Ethical aspects

This research was approved by the Human Research Ethics Committee of the CEUMA University – UNICEUMA protocol nº4,874,439 and all participants signed the Free and Informed Consent Form.

RESULTS

60 volunteers were evaluated, where n=30 belonged to the headache group, with an average age, weight and height of 23.06±4.97 years, 62.02±13.09 kg and 1.62±0.05 m^2, where n=19 (64%) with migraine and n=11 (36%) with TTH. Both groups had a higher percentage of females. Table 1 shows the other sociodemographic characteristics of the sample.

The CA classification was verified, a higher frequency of CA was observed in the headache group in relation to the control n= 28 (93.33%) and n= 7 (26%) respectively, with the most frequent severity in the headache and control was mild and moderate respectively, greater severity was also observed in those with migraine compared to those with TTH, as can be seen in table 2.

Table 1

Mean values and standard deviations of sociodemographic data of the groups with headache n=30 and without headache n=30.

Variable	Headache Group n = 30			
	Total Mean (SD)/%	Migraine (n=19) Mean (SD)/%	CTH (n=11) Mean (SD)/%	Control Group (n=30) Mean (SD)/%
Age	(23.06±4.97)	(22.94±3.11)	(23.27±7.36)	(22.03±0.09)
Weight	(62.02±13.09)(1.62±0.05)	(62.57±12.91)	(61.64±14.01)	(58.55±11.85)
Height		(1.62±0.05)	(1.62±0.05)	(1.63±3.09)
Male Female	2 (7%) 28 (93%)	1 (5%) 18 (95%)	1 (5%) 10 (95%)	6 (20%) 24 (80%)

SD, standard deviation; CTH, tension-type headache.

Table 2

Percentages of cutaneous allodynia classification in the headache (n=30) and control (n=30) groups.

	Headache Group			
Severity	**Total**	**Migraine**	CTH / (%)	Group Control
Light	09 (30%)	05 (26%)	04 (36%)	04 (13%)
Moderate	12 (40%)	08 (42%)	04 (36%)	04 (13%)
Severe	07 (23%)	05 (26%)	02 (18%)	0
No Allodynia	02 (7%)	01 (6%)	01 (10%)	22 (74%)

CTH, tension-type headache.

DISCUSSION

A higher frequency of females was observed in both groups, however it can be highlighted that in the group with headache this frequency was higher. Studies corroborate this statement, where the prevalence of headache mostly affects female individuals, According to Villa (2015), the prevalence of headache complaints is 93% in males and 99% in females, and 76% of women and 57% of men have at least one episode of headache per month.

It was also observed in the present study that individuals in the headache group were diagnosed with tension-type headache and migraine , however, the prevalence of migraine was higher in participants in the group. Among primary headaches, the most common in the population are tension-type headaches (TTH), which affect 1.5 billion people worldwide (FEIGIN et al., 2017) and migraine, with a significant harmful impact on public health , with migraine being the first cause of disability in people under 50 years of age and the third most prevalent disease in the world (FEIGIN et al., 2019).

Allodynia (CA) was observed in the group of individuals with migraine compared to those with TCC or control, such results are in line with the literature, which indicates that CA can occur in up to 80% of patients with migraine . In the last two decades, AC in patients with migraine has aroused increasing interest among researchers, who have explored its pathophysiology and clinical studies (BYUNG-SU KIM et al., 2019).

In fact, CA was more severe and more frequent in the total headache group compared to the control group. Studies with sensory tests and/or data extracted from questionnaires suggest that up to 80% of headache patients have associated allodynia attacks (SILVA, et al., 2012).

Unlike other studies, here we found that young adults already have CA, demonstrating that this marker of central sensitization may be present from the first years of the disease, and that it is possibly related to the frequency of attacks and not necessarily to the years of illness.

Therefore, based on the results presented, the present study becomes relevant, contributing to the deepening of knowledge about cutaneous allodynia , as it is of great importance for physiotherapists to understand the different forms of manifestations and symptoms of AC, since they are

professionals responsible for the treatment and rehabilitation of patients with chronic pain, including conditions that present the comorbidity studied in this study.

CONCLUSION

From the results presented, it can be concluded that, for the population studied, individuals with headache have a greater frequency and severity of cutaneous allodynia compared to individuals without headache, demonstrating the importance of evaluating this symptom in patients with this pathology.

REFERENCES

Benatto, M. T., Florencio, L. L., Carvalho, G. F., Dach, F., Bigal, M. E., Chaves, T. C., & Bevilaqua-Grossi, D. (2017). Cutaneous allodynia is more frequent in chronic migraine, and its presence and severity seems to be more associated with the duration of the disease. Arquivos de neuro-psiquiatria, 75, 153-159. https://doi.org/10.1590/0004-282X20170015

Carod-Artal, F. J., Irimia, P., & Ezpeleta, D. (2012). Chronic migraine: definition, epidemiology, risk factors and treatment. Revista de neurologia, 54(10), 629-637.

Chebani, A. (2021). O efeito da fisioterapia em pacientes com cefaleia do tipo enxaqueca: uma revisão bibliográfica (Bachelor's thesis, [sn]). http://hdl.handle.net/10284/10182

de Menezes Silva, G. A., de Siqueira Bringel, S., de Lima Martins, H. A., Ximenes, R. C. C., Valença, M. M., & de Oliveira, D. A. (2012). Allodynia is more frequent in the individuals with more intense attacks of headache and in women. Headache Medicine, 3(2), 88-91. https://doi.org/10.48208/HeadacheMed.2012.17

Feigin, V. L, Nichols, E., Alam, T., Bannick, MS, Beghi, E., Blake, N., ... & Fischer, F. (2019). Carga global, regional e nacional de distúrbios neurológicos, 1990–2016: uma análise sistemática para o Global Burden of Disease Study 2016. The Lancet Neurology , 18 (5), 459-480. https://doi.org/10.1016/S1474-4422(18)30499-X

Feigin, V. L., Abajobir, A. A., Abate, K. H., Abd-Allah, F., Abdulle, A. M., Abera, S. F., ... & Nguyen, G. (2017). Global, regional, and national burden of neurological disorders during 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. The Lancet Neurology, 16(11), 877-897. https://doi.org/10.1016/S1474-4422(17)30299-5

Gomes, M. J. M. (2012). Alodínia na enxaqueca e as suas implicações no tratamento (Master's thesis). https://hdl.handle.net/10316/80109

Kim, B. S., Park, J. W., Sohn, J. H., Lee, M. J., Kim, B. K., Chu, M. K., ... & Cho, S. J. (2019). Associated factors and clinical implication of cutaneous allodynia in patients with cluster headache: a prospective multicentre study. Scientific reports, 9(1), 6548. https://doi.org/10.1038/s41598-019-43065-1

Lopes, E. P., Oliveira, A. B., Gonçalves, D. A. G., van der Meer, H. A., Visscher, C. M., Speksnijder, C. M., & Calixtre, L. B. (2022). Translation and cross-cultural adaptation of the Headache Screening Questionnaire into Brazilian Portuguese. Musculoskeletal Science and Practice, 60, 102574. https://doi.org/10.1016/j.msksp.2022.102574

Martins, H. A. D. L., Ribas, V. R., Martins, B. B. M., Ribas, R. D. M. G., & Valença, M. M. (2009). Post-traumatic headache. Arquivos de neuro-psiquiatria, 67, 43-45. https://doi.org/10.1590/S0004-282X2009000100011

Silva Junior, A. A. D., Tavares, R. M., Lara, R. P., Faleiros, B. E., Gomez, R. S., & Teixeira, A. L. (2012). Frequência dos tipos de cefaleia no centro de atendimento terciário do Hospital das Clínicas da Universidade Federal de Minas Gerais. Revista da Associação Médica Brasileira, 58, 709-713. https://doi.org/10.1590/S0104-42302012000600017

Stuginski-Barbosa, J., Porporatti, A. L., & Conti, P. C. R. (2017). Cutaneous allodynia in patients with atypical odontalgia. Headache Medicine, 8(1), 19-21. https://doi.org/10.48208/HeadacheMed.2017.5

Tietjen, G. E., Brandes, J. L., Peterlin, B. .L, Eloff, A., Dafer, R. M., Stein, M. R., Drexler, E., Martin, V. T., Hutchinson, S., Aurora, S. K., Recober, A., Herial, N. A., Utley, C., White, L. & Khuder, S. A. (2009). Alodinia na enxaqueca: associação com comorbidades dolorosas. Dor de cabeça: The Journal of Head and Face Pain , 49 (9), 1333-1344. https://doi.org/10.1111/j.1526-4610.2009.01521.X

Villa, T. R. (2017, 17 de janeiro). Self-medication worsens chronic headaches. Minha Vida. https://www.minhavida.com.br/materias/materia-8793

World Health Organization. Headache**.** April. 2016. Available at: https://www.who.int/fr/news-room/factsheets/detail/headache-disorders. Accessed on Sep 24, 2022