**NUMMULAR HEADACHE: UPDATE AND LITERATURE REVIEW**

**Marco Trucco, Valentina Saia¹**

Former Head of Headache Centre, Department of Neurology, Santa Corona Hospital, Pietra Ligure, SV – Italy

Secretary of Nort-West Regional Section of the Italian Society for the Study of Headaches

¹ Department of Neurology, Santa Corona Hospital, Pietra Ligure, SV – Italy

*Corresponding Author: Marco Trucco – Via Costa 7a - 17055 Toirano, SV, Italy - E-mail: info@marcotrucco.it*

**Abstract**

Nummular Headache is a primary headache (even if secondary cases were reported), included in the International Classification of Headache Disorders, 3rd Edition (ICHD-3 - 2018). The aim of this chapter is to review the epidemiological and clinical features, pathogenesis and treatment of nummular headache, following updated literature.

Although Nummular Headache is considered an uncommon headache, information regarding its true incidence and prevalence is lacking. In tertiary headache clinics, its observation is not so rare; until now, more than 540 cases have been described. Its clinical features include continuous or intermittent pain felt in a limited round or elliptic area of the scalp, with a diameter of 1-6 cm, mainly located in parietal, temporal or occipital regions, mostly unilateral but sometimes on the midline or bifocal. Its pathogenesis is unknown, but some clinical data suggest a peripheral origin of pain. The diagnosis is mainly clinical, and its assessment must rule out symptomatic cases due to an underlying lesion, with appropriate investigation. The most used and effective medical prophylactic treatments are gabapentin and botulinum toxin.

**Keywords:** Nummular Headache – Primary headache – Epicrania – Gabapentin - Onabotulinum toxin type A

**Introduction**

The vast majority of headaches coming to the attention of specialists and described by patients with plenty of details and sometimes imaginative expressions, generally share a severe or disabling intensity.

Nevertheless, there is a peculiar and unusual headache, with mild features both in intensity as in diffusion, called Nummular Headache (NH). This term, which is derived from the Latin term *“nummus”,* means *“coin-shaped headache”.* In fact, in NH, pain is circumscribed in a limited, well-defined, coin-shaped area of the scalp.

This headache was first described by Pareja et al. in 2002 (1) and later (2004) included in the Appendix of International Classification of Headache Disorders (ICHD-2) (2) at point A13.7.1; the article, curiously, contained an error in the title (“Numular” instead of “Nummular”, the last term later universally accepted). Following the publication of a large number of case reports and series, NH was recognized as a genuine clinical entity and included in the main body of ICHD-3 beta (2013) (3) and ICHD-3 (2018) (4), within “Other Primary Headaches”, at point 4.8 (Tab. 1).

**Epidemiology**

At present, there are not population-based epidemiological studies concerning NH. There are in literature some large series, mainly from Spanish groups; two of these report a percentage of 4.1% NH cases on total patients seen in a headache clinic in ten years (5), or an annual incidence of 6.64 cases on 100.000 and 0.03% prevalence in general population (6). It is important to notice that these data come from headache specialists very fond in the diagnosis of NH, whilst many cases could be missed by other neurologists, or many NH patients do not consult a doctor because of mild pain, leading to an underestimation of this condition.

Following last published review of this clinical entity (7), more than 540 cases of NH were described. From the same review, F/M ratio shows a female preponderance, 1.6:1, previously estimated from 1.01 (6) to 1.8:1 (8). Mean age at onset is around 48 years, with a very wide range of 4-86 years and uniform distribution across different ages. So that, we can conclude that NH is an uncommon, but not exceptional headache, and it is not typical of a specific period of life. Nearly half of NH patients present a previous or concomitant diagnosis of another headache (migraine, tension-type headache, medication-overuse headache or primary stabbing headache; more rarely trigeminal or occipital neuralgia) (9) (10). In 12.8% of cases a head trauma is found in clinical history (11).

**Clinical features and Diagnostic criteria**

In NH, pain is felt in a limited area of the scalp, round or rarely elliptical, with well-defined borders, with diameter ranging from 1 to 6 cm in the majority of cases. This area, mostly located in the parietal region, but also in occipital or temporal regions (rarely frontal), is generally unilateral, but some cases of a bifocal (5-12-13-14), multifocal (15) or over the midline (5-12-16-17) location were also described. It is not located in a territory innervated by a single cranial nerve. The area in which the pain is felt remains stable over time, even for long periods. The pain is chronic in 75% of described cases, or with spontaneous temporary remissions (18), continuous or intermittent; its intensity is mostly mild to moderate, pressing or throbbing in character, but sometimes severe, stabbing or burning, and also with exacerbations and/or superimposed paroxysms (9). There is no information regarding a circadian pattern; there is an observation of one case of mestrual-related NH (19). In painful area, sensory symptoms as hypoesthesia, hyperestesia, dysestesia, tenderness and allodynia could be also experienced (18).

First articles on NH were dedicated to clinical and symptomatological characterization, including a second case series by Pareja et al. (16), to whom, soon after, other case reports were added, mainly dealing with first therapeutic attempts.

Other papers dealt with peculiar cases: patients with trophic changes of skin or hair in the affected area, such as skin atrophy or alopecia (20-21), or local changes in skin temperature (22). From other reports, symptoms different from those described in previous observations emerged, such as high intensity pain with exacerbations of lancinating quality (14), spontaneous or precipitated by local stimuli, head movements, physical efforts, Valsalva manoeuver (23) or sexual activity (24), and with some migrainous features (25). Some cases were studied with pressure algometer, with the aim of studying pressure pain threshold in affected area and in other cranial regions; this threshold is locally lower and consequentially pain sensitivity is increased in painful area (26).

NH, as described in first observations, was classified between primary headaches. As such, for clarifying the diagnosis, it is mandatory in all cases to identify its clinical features (including the local presence of trophic changes) and to exclude systemic diseases or underlying structural lesions, by means of clinical history, physical examination, blood tests (including immunology screening), and neuroimaging. Differential diagnosis must exclude other forms labeled as epicranias, like epicrania fugax (7), supraorbital neuralgia or occipital neuralgia; if circumscribed, temporal arteritis could be differentiated from NH, by means of inflammatory markers. NH and primary stabbing headache could share some symptoms, especially exacerbations of stabbing pain, but the temporal pattern of NH is generally chronic and continuous.

**Secondary cases**

Since 2007 (27), many cases were described, in which typical pain was secondary to skin or subcutaneous tissue pathologies, bone or intracranial lesions. Following these case reports or case series, patients with NH-like symptoms were affected by superficial aneurysms (28), cranial or cutaneous malformations (29-30), calcific hematoma of the scalp (31), varicella-zoster shingles (32) and eosinophylic granuloma (33). Between intracranial lesions, there are arachnoid cysts (34), a pituitary adenoma (35) and a meningioma (27). A recent review (36) presented eight new cases (bone or cortical emangiomas, superficial inflammatory or cholesterol cysts, osteoma, cavernoma) and discusses previous observations of secondary NH. Another review dedicated to post-traumatic cases of NH, to date described, was published (5). These cases are not to be strictly labeled as secondary, because head injury is generally considered a precipitating event and not the cause of pain (9-36). Following these observations, patients with NH head injury present a higher mean age and are more frequently affected by cutaneous allodynia (5). In literature, some cases precipitated by surgical manipulations (37-38-39) and by an insect bite (20) are also reported, and there are observations of NH associated with autoimmune disorders (rheumatoid arthritis, Sjögren syndrome, Sicca syndrome and antiphospholipid antibody syndrome) (40).

**Pathophysiology**

The pathophysiology of NH is not fully understood. Nevertheless, research has pointed out some typical aspects of the pain suggesting pathogenetic mechanisms. A hypothesis supported by Pareja spanish group, described it as an “epicrania”, attributed to a dysfunction of C-fibers of terminal branches of cutaneous nerves within epicranial tissues (41), as other painful entities (supra-orbital neuralgia, occipital neuralgia, trochleitis, epicrania fugax, primary stabbing headache), consistent with neuropathic pain (20-42). The observations supporting this hypothesis are that symptoms and signs are restricted to a sharply delimited area of the scalp, in the absence of diffuse hypersensibility of pericranial structures (43), as in migraine and tension-type headache; furthermore, algometric measurements indicate that lowering of pain threshold is present only in the symptomatic area (26-44). In addition, the possible presence of trophic changes of skin and/or hair loss, in close temporal and spatial relationship with the pain, is in favour of the peripheral hypothesis, due of the importance of innervation for maintenance of normal skin structure (20). These data strongly suggest a peripheral mechanism, rather than central, as i. e. activation of trigemino-vascular system.

This hypothesis seemed not in accordance with the observation of some cases with painful area located in the midline (16-17-18) and the ineffectiveness, partial or temporary effectiveness of anesthetic infiltration of the affected area (17-37-45-46). But nerve fibers extending across cranial bones and crossing the midline were detected. Further, it has been observed (47) that some nerve branches responsible of pain extend in inner periosteum and in transdiploic or intradiploic layers, penetrating the skull and are inaccessibile to the action of anesthetics.

Structural abnormalities detected in secondary forms could help elucidate even the pathogenesis of primary NH. In fact, the majority of symptomatic NH share lesions located within or adjacent to the scalp or skull bones, in close proximity with painful area. These lesions could damage peripheral fibers of cutaneous and/or pericranial and epicranial nerves. In primary forms, these lesions could be unremarkable to macroscopic observation.

There are also post-traumatic forms of NH, in which the trauma could precipitate the onset of pain because of the injury of epicranial tissues and nerve branches (5).

A dedicated article (48) showed no differences in mood state between NH patients and controls, nor any relationship between clinical parameters of nummular headache and levels of anxiety or depression.

**Treatment**

At present, there are not controlled clinical trials on the treatment of NH, and therapeutic attempts come from case reports or case series.

First cases of Pareja group were untreated or treated only with analgesic or NSAIDs because of mild intensity of pain (in many cases the patients did not require treatment), frequently uneffective or scarcely effective. These drugs are still useful as acute treatment in case of exacerbations of pain. In one case with migraine features, triptans as acute therapy, and topiramate as prophylactic, were effective (25).

Many case report were published in which various prophylactic therapies were proposed: gabapentin (5-14-37-49-50-51-52-53), onabotulinum toxin Type A (9-45-54-55-56), tricyclic antidepressants (17-53-57-58), other antidepressants (9-14), pregabalin (9-59), indomethacin (12-23-60), with non-univocal results. Non-pharmacological treatments were tried in other cases: acupuncture (61) and transcutaneous electrical nerve stimulation (TENS) (46). More recently, other treatments were used: palmitoylethanolamide in monotherapy (62) and in association with topiramate (63), Neurotropin, an extract of animal skin, used as analgesic in Japan (64-65), carbamazepin (9-52), metoprolol (59).

Some symptomatic cases positively responded to surgical excision of the underlying lesion (27-28-33). A series of 49 primary NH patients with associated Doppler signal within the area of pain was treated with minimally invasive arterectomy under local anesthesia with significant benefit (66). A systematic review of primary and secondary cases of NH who underwent various surgical treatments in also available (67). When the surgical resection of the underlying lesion is not possible, medical therapy is generally similar to primary cases.

Following the numerosity of presented cases and their clinical outcome, gabapentin at medium dosage (600-1200 mg) and onabotulinum toxin type A (a protocol for dosage and localization of injection was proposed by García-Azorín et al.: five injections of 5 UI of Botox within the painful area, one centrally and four periferally) (55) seem to-date the most used and effective treatments.

**Prognosis**

The literature about the clinical outcome and prognosis of NH is relatively scarce. In the majority of cases it was described as a benign condition, and temporary or long-lasting spontaneous remissions (6-5-18) or after effective treatment (51-60) were reported. In some cases NH could not respond to treatments and may last for years. Secondary cases with an underlying treatable lesion may well respond to surgical treatment.

**Conclusions**

NH can be defined an organic, primary headache syndrome, with a clearly definite symptomatology: the pain is circumscribed in a rounded or elliptical area of 1-6 cm in diameter and mostly unilateral localization (even if some bilateral and multifocal cases were described), generally fixed in time. The pain is usually of mild to moderate intensity, but severe pain and local exacerbations are described. In literature many cases secondary or associated to other pathologies are present. The typical topographic distribution and the associated features suggest a peripheral pathogenesis, like dysfunction of C-fibers of a terminal nerve, innervating the scalp or skull bones. Diagnosis is mainly clinical, but it is mandatory in all cases to rule out secondary forms by means of blood tests (including immunology screening) and neuroimaging. At present, treatment is based on limited evidence because the lack of controlled clinical trials: the most used and effective medical therapies for NH are gabapentin and onabotulinum toxin type A, but surgical treatments for secondary cases and even for selected patients with primary NH have been successfully performed.

**References**

1. Pareja JA, Caminero AB, Serra J, Barriga FJ, Dobato JL, Barón M, Vela L, Sánchez del Río M. Numular headache: a coin-shaped cephalgia. Neurology 2002; 58: 1678-1679

2. Headache Classification Subcommittee of the International Headache Society. The International Classification of Headache Disorders, 2nd Edition. Cephalalgia 2004; 24 (Suppl 1): 9-160

3. Headache Classification Committee of the International Headache Society. The International Classification of Headache Disorders, 3rd Edition (beta version). Cephalalgia 2013; 33: 629-808

4. Headache Classification Committee of the International Headache Society. The International Classification of Headache Disorders, 3rd Edition. Cephalalgia 2018; 38 (1): 1-211

5. Trigo J, García-Azorín D, Martínez-Pías E, Sierra Á, Chavarría A, Guerrero ÁL. Clinical characteristics of nummular headache and differentiation between spontaneous and posttraumatic variant: an observational study. J Headache Pain 2019; 20: 34

6. Clar-de-Alba B, Barriga FJ, Rodríguez-Caravaca G. Descripción clínica y fisiopatológica de la cefalea numular: serie de casos. Rev Neurol 2020; 70 (5): 171-178

7. Cuadrado ML. Epicranial headaches part 2: Nummular headache and epicrania fugax. Cephalalgia 2023; 43: 4. doi: 10.1177/03331024221146976

8. Wilhour D, Ceriani CEJ, Nahas SJ. Nummular Headache. Curr Neurol Neurosci Rep 2019; 19: 26

9. Pavão-Martins I, Abreu L. Nummular Headache: Clinical features and treatment response in 24 new cases. Cephalalgia Rep 2018; 1: 1-8

10. Iwanowski P, Kozubski W, Losy J. Nummular headache in a patient with ipsilateral occipital neuralgia: a case report. Neurol Neurochir Pol 2014; 48: 141-143

11. Schwartz DP, Robbins MS, Grosberg BM. Nummular Headache Update. Curr Pain Headache Rep 2013; 17: 340

12. Cuadrado ML, Valle B, Fernández-de-las-Peñas C, Barriga FJ, Pareja JA. Bifocal nummular headache: the first three cases. Cephalalgia 2009; 29: 583-586

13. Guerrero ÁL, Cuadrado ML, García-García ME, Cortijo E, Herrero-Velázquez S, Rodríguez O, Mulero P, Porta-Etessam J. Bifocal nummular headache: a series of 6 new cases. Headache 2011; 51: 1161-1166

14. Ruscheweyh R, Buchheister A, Gregor R, Jung A, Evers S. Nummular headache: six new cases and lancinating pain attacks as possible manifestation. Cephalalgia 2010; 30: 249-253

15. Rodríguez C, Herrero-Velázquez S, Ruiz M, Barón J, Carreres A, Rodríguez-Valencia E, Guerrero ÁL, Madeleine P, Cuadrado ML, Fernández-de-las-Peñas C. Pressure pain sensitivity map of multifocal nummular headache a case report. J Headache Pain 2015; 16: 38

16. Pareja JA, Pareja J, Barriga FJ, Barón M, Dobato JL, Pardo J, Sánchez C, Vela L. Nummular headache: a prospective series of 14 new cases. Headache 2004; 44: 611-614

17. Dach F, Speciali J, Eckeli A, Rodrigues GG, Bordini CA. Nummular headache: three new cases. Cephalalgia 2006; 26: 1234-1237

18. Guerrero AL, Cortijo E, Herrero-Velázquez S, Mulero P, Miranda S, Peñas ML, Pedraza MI, Fernández R. Nummular headache with and without exacerbations: Comparative characteristics in a series of 72 patients. Cephalalgia 2012; 32: 649-653

19. Robbins MS, Grosberg BM. Menstrual-related nummular headache. Cephalalgia 2010; 30(4): 507-508

20. Pareja JA, Cuadrado ML, Fernández-de-las-Peñas C, Nieto C, Sols M, Pinedo F. Nummular headache with trophic changes inside the painful area. Cephalalgia 2008; 28: 186-190

21. Irimia P, Palma J-A, Idoate MA, España A, Riverol M, Martínez-Vil E. Cephalalgia Alopecia or nummular headache with trophic changes? A new case with prolonged follow-up. Headache 2013; 53: 994-997

22. Liu Y, Wei T. First three cases of scalp temperature change in symptomatic areas affected by nummular headache: A case report. BMC Neurol 2018: 18: 223

23. Mulero P, Matarazzo M, Pedraza, Llamas S, Herrero S, Domingo-Santos A, Martínez-Salio A, Guerrero ÁL. Nummular headache related to exercise or Valsalva maneuver. Clinical characteristics of 3 cases. Headache 2013; 53: 1167-1168

24. Guillem A. Nummular headache precipitated by coughing or sexual activity. Cephalalgia 2009; 29 (Suppl 1): 161

25. Barón J, Rodríguez C, Ruiz M, Pedraza M, Guerrero A, Madeleine P, Cuadrado ML, Fernández-de-las-Peñas C. Atypical nummular headache or circumscribed migraine: the utility of pressure algometry. Pain Res Manag 2015; 20: 60-62

26. Fernández-de-las-Peñas C, Cuadrado ML, Barriga FJ, Pareja JA. Local decrease of pressure pain threshold in nummular headache. Headache 2006; 46: 1195-1198

27. Guillem A, Barriga FJ, Giménez-Roldán S. Nummular headache secondary to an intracranial mass lesion. Cephalalgia 2007; 27: 943-944

28. López-Ruiz P, Cuadrado ML, Aledo-Serrano A, Alonso-Oviés A, Porta-Etessam J, Ganado T. Superficial artery aneurysms underlying nummular headache – 2 cases and proposed diagnostic work-up. Headache 2014; 54(7): 1217-1221

29. López-Mesonero L, Porta-Etessam J, Ordás CM, Muñiz-Castrillo S, Cuadrado ML. Nummular headache in a patient with craniosynostosis: one more evidence for a peripheral mechanism. Pain Med 2014; 15(4): 714-716

30. Camacho-Velasquez JL. Nummular headache associated with Linear Scleroderma. Headache 2016; 56: 1492-1493

31. Ulivi M. Baldacci F, Vedovello M, Vergallo A, Borelli P, Nuti A, Bonuccelli U. Localized calcific hematoma of the scalp presenting as a nummular-like headache. A case report. Headache 2014; 54(2): 370-372

32. Chen WH, Li TH, Lee LH, Huang CC. Varicella-zoster virus infection and nummular headache: a possible association with epicranial neuralgia. Intern Med 2012; 51: 2439-2441

33. Silva-Rosas C, Angus-Leppan H, Lemp MB, Rozas JP, Quijada AH. Langerhans cell histiocytosis (eosinophilic granuloma) of the skull mimicking nummular headache. Report of two cases. Cephalalgia 2018; 38(4): 794-797

34. Guillem A, Barriga FJ, Giménez-Roldán S. Nummular headache associated to arachnoid cysts. J Headache Pain 2009; 10: 215-217

35. Chui C, Chen WH, Yin HL. Nummular headache and pituitary lesion: a case report and literature review. Ann Indian Acad Neurol 2013; 16(2): 226-228

36. García-Iglesias C, Martínez-Badillo C, García-Azorín D, Trigo-López J, Martínez-Pías E, Guerrero-Peral ÁL. Secondary Nummular Headache: a new case series and review of the literature. Pain Med 2021; 22(11): 2718-2727. doi: 10.1093/pm/pnab174

37. Álvaro LC, García JM, Areitio E. Nummular Headache: a series with symptomatic and primary cases. Cephalalgia 2009; 29: 379-383

38. Yin HL, Chui C, Tung WF, Chen WH. Nummular headache after transsphenoidal surgery; a referred pain-based headache syndrome. Neurol Neurochir Pol 2013; 47(4): 398-401

39. Dai W, Yu S, Liang J, Zhang M. Nummular headache: Peripheral or central? One case with reappearance of nummular headache after focal scalp was removed, and literature review. Cephalalgia 2013; 33(6): 390-397

40. Chen WH, Chen YT, Lin CS, Li TH, Lee LH, Chen CJ. A high prevalence of autoimmune indices and disorders in primary nummular headache. J Neurol Sci 2012; 320: 127-130

41. Cuadrado ML, López-Ruiz P, Guerrero ÁL. Nummular headache: an update and future prospects. Expert Rev Neurotherapeutics 2018; 18 (1): 9-19

42. Pareja JA, Pareja J, Yangüela J. Nummular headache, trochleitis, supraorbital neuralgia, and other epicranial headaches and neuralgias: the epicranias. J Headache Pain 2003; 4: 125-131

43. Fernández-de-las-Peñas C, Cuadrado ML, Barriga FJ, Pareja JA. Pericranial tenderness is not related to nummular headache. Cephalalgia 2007; 27: 182-186

44. Cuadrado ML, Valle B, Fernández-de-las-Peñas C, Madeleine P, Barriga FJ, Arias JA, Arendt-Nielsen L, Pareja JA. Pressure pain sensitivity of the scalp in patients with nummular headache: a cartographic study. Cephalalgia 2010; 30(2): 200-206

45. Mathew NT, Kailasam J, Meadors L. Botulinum Toxin Type A for the treatment of Nummular Headache: four case studies. Headache 2008; 48: 442-447

46. Tayeb Z, Hafeez F, Shafiq Q. Successful treatment of nummular headache with TENS. Cephalalgia 2008; 28: 897-898

47. Pareja JA, Montojo T, Álvarez M. Nummular headache update. Curr Neurol Neurosci Rep 2012; 12: 118-124

48. Fernández-de-las-Peñas C, Peñacoba-Puente C, López-López A, Valle B, Cuadrado ML, Barriga FJ, Pareja JA. Depression and anxiety are not related to nummular headache. J Headache Pain 2009; 10: 441-445

49. Evans RW, Pareja JA. Nummular headache. Headache 2005; 45: 164-165

50. Trucco M, Mainardi F, Perego G, Zanchin G. Nummular headache: first Italian case and therapeutic proposal. Cephalalgia 2006; 26: 354-356

51. Trucco M. Nummular headache: another case treated with gabapentin. J Headache Pain 2007; 8: 137-138

52. Panda PK, Moirangthem V, Sharawat IK. Nummular headache: a rare headache type in a child responding to carbamazepine and gabapentin. Ann Ind Acad Neurol 2021; 24: 943-944

53. Kraya T, Gaul C. Münzkopfschmerz. Eine bislang wenig bekannte Kopfschmerzerkrankung. Nervenarzt 2008; 79: 202-205

54. Seo MW, Park SH. Botulinum toxin treatment in nummular headache. Cephalalgia 2005; 25 (10): 991

55. García-Azorín D, Trigo-López J, Sierra Á, Blanco-García L, Martínez-Pías E, Martínez B, Talavera B, Guerrero ÁL. Observational, open-label, non-randomized study on the efficacy of onabotulinumtoxinA in the treatment of nummular headache: the pre-numabot study. Cephalalgia 2019; 39(14): 1818-1826

56. Dusitanond P, Young W. Botulinum toxin type A’s efficacy in nummular headache. Headache 2008: 48: 1379

57. Grosberg BM, Solomon S, Lipton RB. Nummular Headache. Curr Pain Head Rep 2007; 11: 310-312

58. Cohen GL. Nummular headache: what denomination? Headache 2005: 45: 1417-1418

59. Jiang L, Li M, Liu Q, Liu C, Zhou J. Nummular headache: 2 cases with good beta-blocker responses and a narrative review. Headache 2019; 59: 593-602

60. Baldacci F, Nuti A, Lucetti C, Borelli P, Bonuccelli U. Nummular Headache dramatically responsive to indomethacin. Cephalalgia 2010; 30: 1151-1152

61. Zhu KY, Huang Y, Zhong S, Bao YQ, Tian XL. Nummular Headache: eight new cases and therapeutic results in China. Cephalalgia 2007; 27: 688

62. Dalla Volta G, Trucco M, Carli D, Zavarise P, Ngonga G. Nummular headache: peripheral or central pain? A pathogenetic hypothesis. J Headache Pain 2014; 15(Suppl): S50

63. Chirchiglia D, Della Torre A, Signorelli F, Volpentesta G, Guzzi G, Stroscio CA, Deodato F, Gabriele D, Lavano A. Administration of palmitoylethanolamide in combination with topiramate in the preventive treatment of nummular headache. Int Med Case Rep J 2016; 9: 193-195

64. Yamazaki Y, Kobatake K. Successful treatment of nummular headache with Neurotropin®. J Headache Pain 2011; 12: 661-662

65. Danno D, Kawabata K, Tachibana H. Three cases of nummular headache effectively treated with Neurotropin®. Intern Med 2013; 52: 493-495

66. Guyuron B, Gatherwright J, Reed D, Ansari H, Knackstedt R. Treatment of dopplerable nummular headache with minimally invasive arterectomy under local anesthesia. J Plast Reconstr Aesthet Surg 2018; 71(7): 1010-1014

67. Baldelli I, Mangialardi ML, Salgarello M, Raposio E. Nummular headache and its surgical treatment. Plast Reconstr Surg Glob Open 2020; Jul 28; 8(7): e2989

Tab. 1

Diagnostic criteria of Classification ICHD-3

**4.8 Nummular Headache**

*Description:*

Pain of highly variable duration, but often chronic, in a small circumscribed area of the scalp and in the absence of any underlying structural lesion.

*Diagnostic criteria:*

A. Continuous or intermittent head pain fulfilling criterion B

B. Felt exclusively in an area of the scalp, with all of the following four characteristics:

1. sharply contoured
2. fixed in side and shape
3. round or elliptical
4. 1-6 cm in diameter

C. Not better accounted for by another ICHD-3 diagnosis.

ICHD-3: International Classification of Headache Disorders, third Edition, 2018 (2)