

Atypical nummular headache or circumscribed migraine: The utility of pressure algometry

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A peripheral mechanism has been proposed for nummular headache; however, there have been descriptions of atypical features resembling migraine. The authors describe a case in which algometry assessment facilitated the discrimination between atypical nummular headache and circumscribed migraine. A 21-year-old woman presented with a history of focal episodic pain in a circumscribed area on the left frontal region. The algometry study showed a unilateral and diffuse decrease of the pain pressure thresholds with frontal predominance, as has been proposed for migraine patients. This result led the authors to introduce a more specific preventive therapy with topiramate, with significant relief. In conclusion, cartographic investigation of pressure pain sensitivity is a simple tool that can help to differentiate between nummular headache and migraine. Further confirmatory investigations are needed.

Key Words: *Algometry; Cartography; Migraine; Nummular headache; Pressure pain thresholds*

Nummular headache (NH) was first described in 2002 by Pareja et al (1). It was included in the research appendix of the *International Classification of Headache Disorders, 2nd edition (ICHD-II)*, and has recently been moved to the main body of the *ICHD-III beta*, under the category of other primary headaches (2). NH is defined as a continuous or intermittent pain, commonly described as oppressive and felt exclusively in a rounded or elliptical area, typically 1 cm to 6 cm in diameter (1,2). Its confinement to a well-circumscribed area, as well as symptoms and signs of sensory dysfunction into the affected area, such as tenderness, allodynia, paresthesia, hypoesthesia and trophic changes, suggest a peripheral mechanism. Pain in NH likely stems from epicranial tissues (3). Nevertheless, some patients show atypical features resembling a migraine pattern such as episodic pain, accompanying nausea, photophobia and phonophobia (4), pain triggering or aggravation with physical exercise (5), or temporal relation to menses (6).

We present a case in which pressure algometry assessment facilitated the differential diagnosis between NH and migraine, and led to the initiation of a more effective therapy.

CASE PRESENTATION

A 21-year-old woman was referred to a headache outpatient office due to a three-year history of focal episodic pain located in a circumscribed area on the left frontal scalp. The patient had no personal or family history of typical migraine. The painful area was round and measured 5 cm in diameter. The pain was described as oppressive and throbbing, with an intensity score of 7 of 10 on a visual analogue scale on which

La céphalée nummulaire atypique ou la migraine circonscrite : l'utilité de l'algométrie à pression

Un mécanisme périphérique a été proposé pour expliquer les céphalées nummulaires. Cependant, des caractéristiques atypiques peuvent évoquer la migraine. Les auteurs décrivent un cas où l'évaluation par algométrie a permis de mieux distinguer la céphalée nummulaire atypique de la migraine circonscrite. Une femme de 21 ans a consulté en raison d'antécédents de douleurs focales épisodiques dans une zone circonscrite de la région frontale gauche. L'étude d'algométrie a révélé une diminution unilatérale et diffuse des seuils de pression douloureuse à prédominance frontale, comme on le propose chez les patients migraineux. Ce résultat a incité les auteurs à adopter une thérapie préventive plus spécifique au topiramate, qui a beaucoup soulagé la patiente. Ainsi, l'examen cartographique de la sensibilité à la pression douloureuse est un outil simple qui peut contribuer à distinguer la céphalée nummulaire de la migraine. D'autres recherches de confirmation s'imposent.

0 = no pain and 10 = the worst imaginable pain. Each attack lasted for approximately 1 h and was associated with phonophobia and photophobia; pain was also aggravated by physical activity and was constant in location. The patient described eight to 10 episodes/month and used acetaminophen with only partial relief; she did not identify any clear trigger or menstrual relationship. The neurological examination was unremarkable, with neither sensory symptoms nor trophic changes inside the painful area. No tenderness was identified on palpation of the left supraorbital nerve. Blood tests and magnetic resonance imaging were also normal.

According to the initial diagnosis of NH, preventive treatment with 800 mg/day of gabapentin was initiated, with no significant pain relief. Thus, the authors decided to perform a cartographic study of pressure pain sensitivity on the patient's scalp. The study procedure was conducted following previously published guidelines (7). The patient was headache free on the day of evaluation. Pain pressure thresholds (PPT) were measured on 21 points distributed over the scalp. The locations of and nomenclature for these points were based on standard position of international 10/20 and 10/10 systems for electroencephalogram recordings. Eight points on the right (Fp2, F4, F8, C4, T4, P4, T6 and O2), eight points on the left (Fp1, F3, F7, C3, T3, P3, T5 and O1) and five points along the midsagittal curve (Fpz, Fz, Cz, Pz and Oz) were assessed. The centre of the symptomatic area (between Fp1 and F3) and a symmetrical contralateral point were also assessed in agreement with previous guidelines (7). Therefore, the patient had 23 matching points for PPT assessments (the 21 standardized points plus the symptomatic point and the nonsymptomatic

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TABLE 1
Mean pressure pain thresholds over the scalp

Localization	Mean pressure pain threshold, kg/cm ²
FpZ	1.23
Fp1	1.10
Fp2	1.48
FZ	1.93
F3	1.17
F4	1.50
F7	1.37
F8	1.55
CZ	1.53
C3	1.42
C4	1.43
T3	1.17
T4	1.22
PZ	1.87
P3	1.43
P4	1.55
T5	1.68
T6	1.58
OZ	1.53
O1	1.53
O2	1.75
Fp1-F3 (Painful point)	1.23
Fp2-F4 (Contralateral point)	1.88

contralateral point). All of these points were marked using a marker pen by one of the coauthors over the scalp.

Subsequently, the PPT on each of the marked points was measured by a second assessor using a pressure algometer. This device is a 1 cm² rubber disk attached to the pole of a pressure gauge, which displays pressure values in kg/cm². The patient indicated verbally to stop the pressure stimulation when the PPT was reached. PPT was defined as the minimal amount of pressure at which a sense of pressure changes to pain. Three consecutive measurements at intervals of 30 s were obtained for each point. The order of point assessment was randomized. The mean value of the three PPT measurements was computed for each point (Table 1). Using these data, appropriate software applications (7,8) were used to construct a map of the spatial distribution of pressure pain sensitivity over the scalp (Figure 1).

RESULTS

In the topographical map, PPTs were identified to be diffusely decreased over the left hemicranium, with frontal predominance (Fp1: 1.10, F3: 1.17, F7: 1.37 and Fp1-F3 [pain point]: 1.23), resembling patterns previously described in migraine patients (8). The PTT values in these four points were compared with those located in the symmetrical contralateral scalp using a *t* test. Measurements were significantly decreased over the left scalp (1.21 ± 0.11 versus 1.6 ± 0.18 , $P=0.013$).

Symptomatic therapy with almotriptan was then initiated, with significant relief of pain attacks. Preventive treatment with topiramate that was titrated to 100 mg/day was also recommended; a significant reduction in pain attacks (two per month) and their intensity (5 of 10 on a visual analogue scale) was also achieved.

DISCUSSION

The present case fulfilled the diagnostic criteria of NH according to ICHD-III (2) because it was a circumscribed pain felt in a small area of the scalp (5 cm). It may also have been interpreted as a probable migraine without aura with atypical location and duration of pain attacks. From the first description of NH (1), the clinical spectrum of this entity has increased. Many patients experience continuous pain,

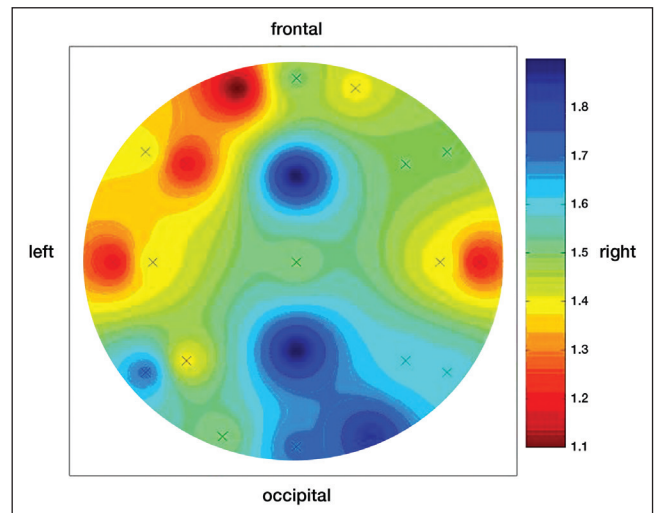


Figure 1) Map of the spatial distribution of pressure pain sensitivity

with or without exacerbations (9), while others have an intermittent pain with pain-free intervals, as occurred in the current case (10,11).

Contrary to characteristics suggesting a peripheral origin of NH, some data tend to support a central origin of NH in some patients, such as multifocal descriptions or pain reappearance in another area after removal of symptomatic NH scalp (4). On the other hand, the occurrence of migraine in a single location has been described, mainly around the eyes, or in the frontal or temporal scalp (12,13).

According to the atypical characteristics in the current case, were we faced with an NH with central sensitization, or an atypical circumscribed migraine? We decided to begin with the first-line therapy choice for NH (gabapentin), which was ineffective; therefore, we decided to perform a cartographic study of pressure pain sensitivity. This easily performed technique demonstrated a diffusely decreased PPT over the left hemicranium with frontal predominance, as has been previously described in migraine (8), contrary to the strictly local decrease in PPT over the symptomatic area typical of NH (7). Strictly speaking, the duration of the pain attacks were too short for a migraine and, thus, the effect of almotriptan was not easily judged. Regardless, when standard antimigraine symptomatic and preventive therapies were added, significant improvement was achieved.

CONCLUSION

A clinical picture of episodic NH with atypical features may correspond to a 'nummular migraine', and may exhibit different therapy responsiveness. Pressure algometry is a simple technique that can help in the diagnosis of NH or migraine. Additional descriptions are needed to confirm this hypothesis.

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