Migrainous Features in Cluster Headache

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Current Pain and Headache Reports 2001, **5**:67–70
Current Science Inc. ISSN 1531–3433

Migraine and cluster headache have been considered entirely separate clinical syndromes, both in routine clinical practice and in the 1988 International Headache Society classification. Neurologists seeing large numbers of patients soon realize, however, that there is a considerable overlap between the two conditions. Some patients have attacks with the cardinal features of cluster headache, but also have a few symptoms (especially a visual aura) usually attributed to migraine. In addition, it is not uncommon for a patient with a lifetime's history of migraine to experience a typical bout of cluster headache, although the reverse is less common. This article reviews the published series of such patients.

Introduction

The definitions of the International Headache Society (IHS) attempt to make a clear distinction between migraine and cluster headache based on the pattern, duration, and severity of the attacks [1]. This has served to minimize diagnostic variability between observers, although it has to be admitted that there is still considerable subjectivity in the interpretation of a patient's symptoms. There are four main distinctive features of cluster headache in comparison with migraine: the strict unilaterality of short-lived attacks of pain, the periodicity of the syndrome, the accompanying ipsilateral autonomic features, and restlessness during pain.

Distinctive Features of Cluster Headache in Comparison with Migraine Headache

Location

The pain in migraine and cluster headache is predominantly first division trigeminal [2••]. The pain of migraine is unilateral in about two thirds of patients, but may be bilateral at onset (40%) or start unilaterally and become generalized. The side may change within the same attack [3]. The pain of cluster headache is almost invariably unilateral and usually experienced consistently on the same side. Most attacks of cluster headache last between 30 and 120 minutes [2••,4–6] and seldom last more than 3 hours [6], whereas migraine attacks last at least 4 hours [2••]. The median attack duration for migraine headache is 1 day, and a fifth of patients have attacks lasting 2 to 3 days [7].

Duration and periodicity

Cluster headache attack frequency can vary from one attack per week [6] to up to eight attacks per day [8,9]. Patients most commonly experience one to two attacks daily, with a median attack frequency of one attack daily [2••,4–6]. Individual attacks tend to occur at the same hour. This pattern is usually maintained for several days or weeks at a time [6,9–11], and a nocturnal preponderance for the attacks has been consistently observed [4–6,9,12,13]. Most patients experience attacks occurring in bouts lasting between 1 to 3 months, during which cluster headache paroxysms can occur daily. A seasonal preponderance of cluster headache is common, with onset of the bouts occurring mainly in the spring and autumn [9,12,14,15]. This consistent periodicity is rarely seen in migraine. Among active migraineurs, the median attack frequency is 1.5 attacks per month, although 10% have weekly attacks [7].

Autonomic features

The pain of cluster headache is accompanied by ipsilateral autonomic symptoms, a parasympathetic discharge, and a sympathetic deficit. Most commonly observed are lacrimation, conjunctival injection, nasal congestion, and rhinorrhea. Facial swelling and a partial Horner's syndrome are less commonly noted (Table 1). Autonomic disturbance can be associated with attacks of migraine [17,18] but the symptoms are considerably less common (Table 1).

Restlessness

The IHS criteria for migraine headache include "aggravation by ..... routine physical activity." The majority of patients with cluster headache are restless during attacks of pain, or movement specifically does not exacerbate the pain. In a comparison of cluster headache and migraine, Ekbom [2••] found the pain of cluster headache was better or unaffected by movement in 80% compared with 15% of migraineurs, whereas the pain was worse with movement in 20% of patients with cluster headache and 85% with

Table 1. Symptoms that accompany the pain of cluster headache

Study	Patients in series, *n*	Lacrimation, %	Conjunctival injection, %	Nasal congestion and rhinorrhea, %
Cluster headache				
Friedman and Mikropoulos [12]	50	80	50	NC + R = 88
Ekbom [2••]	105	82	84	NC + R = 68
Lance and Anthony [4]	60	82	45	NC = 47; R = 15
Sutherland and Eadie [6]	58	62	45	NC = 35; R = 7
Kudrow [13]	500	84	78	NC + R = 72
Manzoni *et al.* [5]	180	84	45	NC = 48; R = 43
Nappi *et al.* [16]	251	80	64	NC = 48; R=38
Migraine				
Ekbom [2••]	40	15	12.5	NC + R = 10

NC—nasal congestion; R—rhinorrhea.

migraine headache. These findings are corroborated by a number of authors [5,19]. One of photo- or phonophobia only may accompany tension-type headache but none accompany cluster headache.

Clinical Features of Migraine in Patients Diagnosed with Cluster Headache

Laterality of pain

Between 9% and 16% of patients with cluster headache have experienced pain on both the right and left side during different attacks, even sometimes in the same bout [4–6,12,13]. Pain occurring simultaneously on both sides during an attack has been reported but is rare [20,21]. A change of side within the same attack is even more rare [6,22]. In contrast, about 5% to 10% of migraine attacks are bilateral, and many patients report that the pain moves from one side to the other during an attack [2••].

Nausea and vomiting

Nausea accompanying migraine headache is common, occurring in about 90% of patients, whereas accompanying vomiting occurs in about half [2••,23]. Earlier reports suggested that nausea and vomiting never accompanies cluster headache [10], but subsequent series have found nausea to be present in half of patients with cluster headache, although vomiting remains less common (Table 2).

Hypersensitivity to light and noise

Sensory hypersensitivity also occurs with the majority of migraine headache attacks; photophobia and phonophobia occur in up to 90% of patients [2••,23]. The range of percentages of patients with cluster headache who experience photophobia has varied across studies, between 5% and 72% (Table 2). Phonophobia was reported by Ekbom [2••] in 39% of 105 patients. Of 50 patients observed by Kudrow [13] during the cluster attack, 72% experienced photophobia with or without phonophobia.

Focal neurologic disturbances

Aura symptoms, usually involving the eyes but occasionally sensation in the face or limbs, speech disturbances and even weakness, are of course, characteristic of migrainous attacks with aura, even though they only affect a minority of patients with migraine as a whole. In patients with cluster headache these symptoms have included flashing lights [4], scintillating scotomas, contralateral facial and limb paresthesia [6], and vertigo and mild ataxia [4].

In Lance and Anthony's [4] series of 60 patients, one experienced visual spots and one visual flashes, and four felt "dizzy." Medina and Diamond [24] described a further five patients, but they do not specify the total cluster headache population from which these were drawn. A recent study by Silberstein *et al.* [25••] describes 6 of 101 patients with cluster headache with focal symptoms: five of these were visual and one olfactory. The visual patients included a father and his daughter. The aura always preceded the headache and lasted for between 5 and 120 minutes. It was of particular interest that one patient had a visual aura preceding attacks of cluster headache, but also had migraine without aura; the authors feel this suggests that cluster headache is not merely a less effective trigger of auras in patients with an inherent liability to them.

Premonitory symptoms

Premonitory symptoms are not included in the IHS classification criteria for migraine but have been reported to precede the acute migraine attack in at least a quarter of patients [26]. Premonitory symptoms, however, are not specific to migraine. Blau [26] reported premonitory symptoms in 8% of 150 patients with cluster headache, and similarly Figuerola *et al.* [27] in 11% of 139 patients. Reported symptomatology has varied and includes fatigue, apathy, irritability, panic, elation, hypersensitivity to light, noise and touch, yawning, stiffness, paresthesias, blurred vision, and sleep disorders.

Table 2. Associated features in cluster headache*

Study	Patients in series, *n*	Facial swelling, %	Partial Horner's syndrome, %	Nausea	Vomiting	Photophobia
Cluster headache						
Friedman and Mikropoulos [12]	50	2	—	28 (+ vomiting)	—	22
Ekbom [2••]	105	10	18†	19	5	69
Lance and Anthony [4]	60	10	32	43	15	12
Sutherland and Eadie [6]	58	—	7†	12 (+ vomiting)	—	5
Kudrow [13]	50	—	—	54	—	72
Manzoni *et al.* [5]	180	—	—	40	—	—
Nappi *et al.* [16]	251	—	59	40.6	23.9	55.8

* Cohorts of at least 50 patients with cluster headache.
† Persistent Horner's syndrome.

Coexistence of Migraine and Cluster Headache

In contrast with the patients whose individual attacks have characteristics of both types of headache, more patients have attacks of migraine and cluster headache at different times—it is most common for one category of regular headache to replace the other over a period of several months or longer—typically a patient with long-standing migraine develops cluster headache later in life. This phenomenon was analyzed in detail by Ekbom [28]: of 163 patients with cluster headache interviewed during an active period, five (3.1%) had had typical migrainous attacks in the past—in three of these the migraine had ceased as the cluster headache began. Ekbom considered the prevalence of migraine in his patients with cluster headache to be similar to that in the general male population.

More recently, Andersson [29••], who reviews the previous literature in detail, found in his own patients with cluster headache that 17% had a previous history of migraine; because these patients were predominantly male, he judges this to be substantially larger than the 6% prevalence of migraine in the general population [30]. Once again he found that in the majority of these patients the migraine settled as the cluster headache starts. However, other authors have witnessed occasional migraine attacks during, and often limited to, the cluster period, and with migraine attacks witnessed in some male and female patients with no clear past history of migraine [31]. These data suggest that although migraine and cluster headache can occur within the same individual, the attacks are usually discrete and distinct from one another.

Solomon and Kappa [32] analyzed 1486 patients with migraine and 202 patients with cluster headache, of which 16 (1%) carried both diagnoses. In seven patients migraine was replaced by cluster headache, in seven patients preexisting migraine continued after the cluster headache had started, in one patient both types of headache started at once, and in one patient long-standing cluster headache was accompanied by migrainous attacks at a later date. It seems, therefore, likely that migraine is a little more common in patients with cluster headache than in the general population, but no convincing explanation has been offered for the mechanism of this. Most of the larger published series have reported the familial incidence of migraine in first-degree relatives of individuals with cluster headache to be the same as the incidence in the general population [13,26,33,34].

Conclusions

Distinctions between related clinical syndromes, although clearly necessary for epidemiologic and research purposes, are often artificial, and there are many patients whose clinical features may overlap several such categories. Migraine and cluster headache are no exception—not only do a small but consistent minority of patients with cluster headache have migrainous features, especially an aura, before or during their attacks, but others have both types of attack at different times during their lives. Our current understanding of the likely mechanisms is too primitive to offer coherent explanations for these phenomena.

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