Chapter 100

Primary Headache Attributed to Sexual Activity

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International Headache Society (IHS) code and diagnosis:
4.4 Primary headache associated with sexual activity
4.4.1 Preorgasmic headache
4.4.2 Orgasmic headache

World Health Organization (WHO) code and diagnosis: G44.805 Primary headache associated with sexual activity

Short description: Headache precipitated by sexual activity, usually starting as a dull bilateral ache as sexual excitement increases and suddenly becoming intense at orgasm, in the absence of any intracranial disorder

Previously used terms: Benign sex headache, coital cephalalgia, benign vascular sexual headache, sexual headache

INTRODUCTION

In ancient times, Hippocrates described a headache resulting from "immoderate venery" (cited in [1]). Wolff, in his 1963 monography on headache (1963) (2), and accounts in the 1970s (3–7) drew attention to a benign form of headache occurring during sexual activity. The term "benign" implies a primary headache disorder not caused by a ruptured aneurysm or other intracranial disorders, which have to be ruled out by physical examination and by additional investigations (8).

In the first systematic description of the disease, 21 patients with this condition were reported (7). One subgroup of patients had pain that evolved slowly, which was possibly related to excessive muscular contraction of the neck and jaw muscles. A second, larger group of patients suffered a sudden onset of severe pain shortly before, at the moment of, or shortly after orgasm. Another publication described three patients with a third type whose pain resembled that of headache following lumbar puncture, suggesting that the latter headache resulted from a tear of the dura during sexual intercourse, leading to low cerebrospinal fluid pressure (6). The first edition of the IHS classification differentiated three types of headache associated with sexual activity (diagnoses 4.6.1 to 4.6.3): type 1 as a dull ache in the head and neck (7), which intensifies as sexual excitement increases; type 2 as a sudden severe ("explosive") headache occurring at orgasm; and type 3 as a postural headache resembling the one caused by low cerebrospinal fluid pressure. It appeared, however, that type 3 is very rare and must be regarded as a symptomatic headache. Thus, in the second edition of the IHS classification, only type 1 and type 2 are defined (see Table 100-1).

In 1986, Johns (9) reviewed 110 published cases (24% type 1; 69% type 2; 7% type 3). With one exception (10), all subsequent publications concerned type 2.

EPIDEMIOLOGY

The prevalence of headache attributed to sexual activity is unknown. In the only population-based epidemiologic study, the lifetime prevalence was about 1% with a broad confidence interval and similar to that of benign cough headache and benign exertional headache (11). Some authors believe that this headache is underestimated, since patients often feel embarrassed to report intimate details about their sexual activities (3). In cohort studies of headache clinics, it is estimated that patients with headache attributed to sexual activity account for approximately 0.2% to 1.3% of all headache patients (12–14).

PATHOPHYSIOLOGY

The exact pathophysiology of headache attributed to sexual activity is unknown. There is no evidence that this headache type is primarily genetic, although a report

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TABLE 100-1 Operational Diagnostic Criteria of the IHS for Headache Attributed to Sexual Activity

4.4.1 Preorgasmic headache
A. Dull ache in the head and neck associated with awareness of neck and/or jaw muscle contraction fulfilling criterion B
B. Occurs during sexual activity and increases with sexual excitement
C. Not attributed to another disease
4.4.2 Orgasmic headache
A. Sudden severe ("explosive") headache fulfilling criterion B
B. Occurs at orgasm
C. Not attributed to another disease

of a family with four affected sisters has been published (9).

Due to the nature of the headache, it has been suggested that type 1 is related to muscle contraction or tension-type headache (8,15,16). Some emphasize the similarity to primary exertional headache and postulate that a transient increase in intracranial pressure due to a Valsalva maneuver during coitus might play a pivotal role in the pathophysiology of type 2 (17,18). In three patients, segmental spasms of cerebral arteries had been observed in the days after the headache, but the changes were still present months after the first angiography in two of them (19-21), and in a series of nine patients no abnormalities of the cerebral vessels were revealed by angiography (7). Some authors emphasize a pathophysiologic relationship between type 2 and migraine (9,16,22) and a release of vasoactive substances such as neurokinins, serotonin, and catecholamines (4,6,16). However, these assumptions have been speculative and not based on clinical studies.

Heckmann et al. (23) suggested that patients with headache attributed to sexual activity had an impaired metabolic cerebrovascular autoregulation. This was confirmed by a study showing that under the condition of sexual excitement and other still unidentified factors, the cerebral vessel walls respond to pH decrease with impaired vasodilation compared with healthy subjects and migraineurs (24). In contrast to previous assumptions (25–27), arterial hypertension is not a major risk factor for headache attributed to sexual activity, since it is found in only 18% of the patients (14). However, patients with this type of headache show a higher increase of arterial blood pressure under physical stress (24).

Furthermore, it could be shown that patients with headache attributed to sexual activity have a loss of cognitive habituation during their bout (but not during the headache) similar to that known from patients with migraine (28). This finding was independent from the coexistence of migraine in these patients. However, a comorbidity of migraine or a positive family history both for migraine and headache attributed to sexual activity type 2 has been shown in several case series (9,14–16,26). The link between migraine and headache attributed to sexual activity has still to be elucidated.

A recent clinical comparison between type 1 and type 2 (14) and experimental data have not given any evidence that these are pathophysiologically distinct disorders. Both types may be different manifestations of the same disorder rather than distinct entities.

CLINICAL FEATURES

The operational diagnostic criteria of the IHS are given in Table 100-1. The following description of the typical clinical features of headache attributed to sexual activity is based on a recent analysis of 51 patients (Table 100-2) (14).

The mean age of patients coming for the first time to a clinic with this headache is 39 +/− 11 years. The male:female ratio is about 3–4:1 (8,10,15,16). Type 1 occurs in about 22% and type 2 in about 78%. No patient is known with both type 1 and type 2 on different occasions. The mean age of onset is about 35 years (6,8,10,14–16). However, the onset has two peaks: the first peak is between the 20th and 24th year of life and a second, broader peak is between the 35th and 44th year of life (14). Whether these peaks are caused by changes of sexual activity or by endogenous components is still unclear.

Two-thirds of the patients have their headache in a bout. Defining a bout as at least two attacks occurring in at least 50% of sexual activities and then none for at least 2 weeks despite continuing sexual activities, the mean duration of bouts is 3.2 ± 5 months (minimum 2 days, maximum 18 months). The number of attacks within one bout

TABLE 100-2 Comparison of Demographic and Clinical Features Between Type 1 (n = 11) and Type 2 (n = 40) of Headaches Attributed to Sexual Activity

	Type 1	*Type 2*
Age at onset (years)	39.5 ± 10.3	34.0 ± 10.5
Sex ratio (female:male)	2:9	11:29
Unilateral pain	36%	33%
Occipital/diffuse localization	82%	75%
Throbbing quality	36%	50%
Duration of severe pain (median)	30 min	30 min
Duration of milder pain (median)	1 hr	4 hr
Arterial hypertension	27%	15%
Comorbid migraine	9%	30%
Comorbid exertional headache	9%	35%
Comorbid tension-type headache	55%	43%

From ref. 44.

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ranges from 2 to 50 attacks. In those patients with a second bout, the mean remission period was 22 ± 22.4 months. About one-third of the patients suffer from headache attributed to sexual activity for a longer duration without remissions (mean duration 7.5 ± 7.1 years). Out of these patients, most have infrequent attacks (in <20% of sexual activities) and only about 20% have regular attacks during nearly every sexual activity.

Pain is occipital or diffuse in 76% of the patients, bilateral in 67%, and unilateral in 33%. The quality is dull in 49%, throbbing in 47%, and stabbing in 45% of the patients. The duration of pain varies widely. The median duration is 30 minutes (range 1 minute to 24 hours). Most patients (86%) have severe pain for less than 4 hours. None has severe pain lasting longer than 24 hours, but 82% have longer-lasting milder pain. The median duration of the milder pain is 4 hours. Accompanying symptoms such as nausea and dizziness are rare but might occur.

The usual setting for this type of headache is sexual activity with the usual partner in 94%. In addition, about one-third of the patients experience the headache also during masturbation but only very rarely exclusively during masturbation (29). The rate of this headache is not increased when the partner or the setting changes. Interestingly, one patient reported headache with a nocturnal emission following dreaming during sleep (26). About 40% of the patients can terminate their headache by stopping sexual activity and 51% can ease the headache by taking a more passive role during sexual activity.

Normally, patients with headache attributed to sexual activity are healthy and do not have concomitant vascular diseases. However, about two-thirds also suffer from other headache disorders such as episodic tension-type headache (35%), benign exertional headache (35%), migraine (25%), and chronic tension-type headache (10%). Comorbid migraine and exertional headache are more often in type 2 than in type 1 (Table 100-2).

Comparison between type 1 and 2 does not reveal any differences in mean age at onset; sex ratio; and localization, quality, and duration of pain (Table 100-2). As expected by the definition, there is a significant difference regarding the onset time related to orgasm between type 1 and type 2. Median onset time in type 1 is 150 seconds before orgasm; median onset time in type 2 is exactly with or up to 5 seconds before orgasm.

DIAGNOSIS

The operational diagnostic criteria of the IHS require the exclusion of conditions such as subarachnoid hemorrhage (SAH) and arterial dissection when headache attributed to sexual activity is diagnosed for the first time. SAH occurs during sexual activity in about 4 to 12% of all cases (30,31). Furthermore, cerebral or brainstem infarction at the time of orgasm have been reported (8,22,32). In one patient who suffered from symptomatic orgasmic headache caused by an intraventricular arachnoid cyst, headaches disappeared after removal of the cyst (33).

Attempts have been made to define "red flags" that indicate a serious underlying pathologic condition (14,18,31). Vomiting; decreased level of consciousness; meningism; motor, sensory, or visual disturbances; or severe pain persisting beyond 24 hours are not features in patients with primary headaches attributed to sexual activity and require immediate diagnostic workup. Therefore, a neurologic examination and a computed tomography (CT) scan of the brain are mandatory for the final diagnosis. In addition, an arterial dissection (in particular of the vertebral arteries) has to be excluded by ultrasound examination or by magnetic resonance angiography. If the history of the patient and/or the neurologic examination are suspicious for SAH, a lumbar puncture has to be performed if the CT scan is normal.

PROGNOSIS

The prognosis of headaches attributed to sexual activity is good. Normally, the headache only appears in a bout of some weeks' or months' duration and disappears without specific treatment. However, in few patients, the headache can occur for a very long time over several years. Even in these cases, no structural damage has been observed.

MANAGEMENT

The management of headache attributed to sexual activity is based on experience and case series, not on clinical studies. First, education and information on the benign nature and on the good prognosis of this headache type is most important. More intense headache recurrence has been reported when patients resumed sexual activity in the days after an attack (8,34–36). Therefore, it seems reasonable to advise patients to remain sexually inactive as long as they are not completely free of symptoms (36). More patients with type 1 can terminate the pain by stopping sexual activity early or by being more passive during the sexual activity (73% vs. 30% in type 2) (14,16,27). No acute drug treatment of the headache is known. Analgesics (ibuprofen, diclofenac, paracetamol, acetylsalicylic acid) given after the onset of headache were of limited or no value in nearly all patients (37).

If changing of the sexual habits is not sufficient to treat the headache, short-term prophylaxis can be tried. Indomethacin in a dose between 50 and 100 mg given 30 to 60 minutes prior to sexual activity has been successful

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TABLE 100-3 Pragmatic Management of Headache Attributed to Sexual Activity

Step 1:
Patient education and advice:
- Inform about the benign nature and the good prognosis of the headache
- Instruct to remain sexually inactive during headache phase and the day after
- Advise to take a more passive role during sexual activity

Step 2:
Short-term prophylaxis:
- Indomethacin 50 to 100 mg about 30 to 60 minutes before sexual activity

Step 3:
Prophylactic treatment:
- Propranolol 120 to 240 mg/day
- Metoprolol (100 to 200 mg/day) or diltiazem (180 mg/day) if propranolol fails, is not tolerated, or is contraindicated

in seven patients, but ibuprofen and diclofenac were without sufficient benefit (15,16,37). In one case, naratriptan 2.5 mg was effective as short-term prophylaxis (38). Ergotamine and benzodiazepines have also been tried for short-term prophylaxis without significant benefit in most patients (6,35,39,40).

For those patients with longer-lasting bouts or with repeated attacks, prophylactic treatment can be indicated. Propranolol (doses between 40 and 240 mg) has been reported to be effective in three case series with an efficacy between 80 and 100% (9,15,35–37). However, there are also reports of treatment failure with propranolol (6,16,38). Successful treatments of headache attributed to sexual activity with metoprolol, atenolol, and diltiazem have also been presented (16,27,37). Verapamil was ineffective in one case (38). Any prophylactic treatment should be stopped after a few months since the headache occurs only in bouts in most of the patients.

A pragmatic approach for the management of headache attributed to sexual activity is given in Table 100-3.

Headache attributed to sexual activity can be very frightening, and explanation, counseling, and reassurance can be the most important therapeutic approaches (41,42). Widespread knowledge about the existence and nature of this headache disorder will improve medical care and help patients to confide their complaints to their doctors.

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