

Headaches related to sexual activity

J. W. LANCE

From the Division of Neurology, The Prince Henry Hospital, Sydney, and the School of Medicine, University of New South Wales, Australia

SYNOPSIS Twenty-one patients experienced headache related to sexual activity. Two varieties of headache could be distinguished from the clinical histories. The first, developing as sexual excitement mounted, had the characteristics of muscle contraction headache. The second, severe, throbbing or 'explosive' in character, occurring at the time of orgasm, was presumably of vascular origin associated with a hyperdynamic circulatory state. Two of the patients with the latter type of headache had each experienced episodes of cerebral vascular insufficiency on one occasion which subsequently resolved. A third patient in this category had a past history of drop attacks. No evidence of any structural lesion was obtained on clinical examination or investigation, including cerebral angiography in seven patients. Eighteen patients have been followed up for periods of two to seven years without any serious intracranial disorder becoming apparent. While the possibility of intracranial vascular or other lesions must always be borne in mind, there appears to be a syndrome of headache associated with sexual excitement where no organic change can be demonstrated, analogous to benign cough headache and benign exertional headache.

The association of headache with 'immoderate venery' was first pointed out by Hippocrates (Adams, 1848). As headache may prevent the enjoyment of certain foods and wine, exercise, or even a quiet weekend's relaxation at home, it is understandable that it may blight other pleasurable activities on occasion.

The sudden appearance of headache during sexual intercourse, particularly at the time of orgasm, naturally gives rise to anxiety as the person concerned may think that he or she is about to die of cerebral haemorrhage. This fear has some foundation, as sexual intercourse has been known to precipitate subarachnoid haemorrhage (Fisher, 1968), but it is important to recognise that the occurrence of headache at this time is not necessarily indicative of serious intracranial disorder.

Correspondence in the *British Medical Journal* (1973) followed an answer given in the section 'Any Questions?' to an inquiry headed 'Severe headache accompanying orgasm'. The question described a woman of 50 years who for the previous few months had experienced 'a severe gripping pain which seems to encase her whole head' associated with orgasm. It lasted for about 10 minutes, after which she dropped

off to sleep. The questioner asked 'Is this a recognised phenomenon?' The printed answer began 'This is not a recognised phenomenon' and concluded 'It might be wise therefore to assume that something is happening during orgasm which is raising a presently sub-clinical disorder to a clinically apparent level.' In response to this, a number of correspondents wrote to mention individual cases of apparently benign coital headaches and Martin (1973) described six male patients, all of whom were subject to sudden severe headache towards the end of intercourse. The headache was commonly bilateral, affecting the back of the head more often than the front and lasting from 10 to 60 minutes, although more prolonged attacks were recorded. Three patients had a past history of migraine. All had remained in good health. Martin quoted Kriz who had reported 25 cases, all male, in *Ceskoslovenska Neurologie*.

Paulson and Klawans (1974) reported 14 patients with this condition as having 'benign orgasmic cephalgia', a title which does not embrace the instances where headache develops before orgasm is achieved. A comparison with 'cough headache', described by Sir Charles Symonds (1956) seems most appropriate. Sharp pain in the head on coughing, sneezing, straining, laughing, or stooping has long been recognised as a symptom of organic intracranial

disease. Symonds presented the case histories of six patients in whom this symptom was of organic origin and 21 patients in whom no intracranial cause became apparent. Cough headache disappeared spontaneously in nine patients and improved in six patients. Two patients died of heart disease and four were lost to follow-up.

Rooke (1968) followed up 103 patients with exertional headaches (which term embraced headaches in response to running, bending, coughing, sneezing, heavy lifting, or straining at stool) for three years or longer. Only 10 patients were found to have any intracranial abnormality, while 73 patients lost their headaches entirely or were greatly improved. Headaches occurring during sexual activity may be considered in the same light: a group in which it is symptomatic of intracranial aneurysm or other intracranial disorder and another group in which it proves to be an unpleasant but harmless inconvenience. There may thus be a 'benign sex headache' analogous to benign cough headache and benign exertional headache.

A brief report of seven patients with this syndrome was given to the Australian Association of Neurologists (Lance, 1974) and, by the courtesy of my colleagues who have referred additional patients or made available their case histories, it is now possible to present a clinical analysis of 21 patients to help in the recognition of the typical clinical presentation and speculate concerning its pathophysiology.

THE PATIENTS AND THE NATURE OF THEIR HEADACHE

Of the 21 patients, 16 were male and five female, aged from 18 to 58 years (mean 40 years).

The time elapsing between the first headache occurring during sexual excitement, and consultation with a medical practitioner varied from one month to three years. From one to 10 such headaches had been experienced by each patient at the time of the initial consultation. The headache was capricious in that it might develop on several occasions in succession, then not trouble the patient for some months or even years before appearing again, although there was no apparent alteration in sexual technique.

The headache evolved slowly during sexual activity in three patients, appeared a minute or so before orgasm in five patients, developed suddenly at the moment of orgasm in nine patients, shortly after climax in two patients, and was delayed until two to three hours after intercourse in one patient, awakening him from sleep. Two patients were uncertain of the precise time of onset. Three patients experienced headache with masturbation, two of whom also complained of similar headaches during sexual intercourse. The headaches of the other patients were confined to sexual intercourse.

The site of headache was occipital in 14 patients, involving the neck in five and radiating forward to one side of the head in two; the headache was generalised in six patients and restricted to the left frontal region in the remaining patient. It was described as dull, tight, or cramping in quality by four patients; throbbing by five patients; abrupt, sharp, severe, or excruciating by seven patients; and explosive by three patients (one said it was 'like a steel spring snapping'). Two patients did not commit themselves about the nature of the headache. One patient, categorised above as having a dull headache, attempted intercourse again within half an hour which resulted in acute exacerbation of the headache and other symptoms and signs to be recounted later.

Those patients who desisted from sexual activity when headache was first noticed found that it subsided within a period of five minutes to two hours. Those who proceeded to orgasm reported that a severe headache persisted for three minutes to four hours, and a milder headache lingered for one to 48 hours afterwards.

The patients first consulted their doctor about this symptom from two to seven years ago. Three patients have changed addresses and are lost to follow-up. Four patients are still subject to occasional headaches. The remainder are not known to have had further headaches and are alive and well.

FACTORS RELATED TO PATHOPHYSIOLOGY

MUSCLE CONTRACTION

Of the 21 patients, 10 stated that they were subject to headaches at times of emotional tension unrelated to sexual activity. The tension headache involved the same area of the head and was similar to but milder than the headaches experienced with intercourse in seven patients. In the other three, the tension headache was bifrontal or generalised, whereas the coital headache was occipital in two and bitemporal in one. The last-mentioned patient said that he awakened with a dull headache most mornings but woke up free of headache when sexual intercourse had taken place the night before. If, on the other hand, he indulged in intercourse in the mornings, orgasm was usually followed by a violent bitemporal headache. Two of the above patients had many additional minor complaints related to nervous tension. One patient, who had led a vigorously promiscuous sexual life in his earlier years, found at the age of 48 years that headaches occurred only when he was attempting intercourse for the second or third time in close succession. He was conscious of the greater physical and mental strain imposed on these occasions by his relatively reduced potency. Another patient, not otherwise prone to tension headache, developed a dull occipital

headache with sexual intercourse which became intense when he achieved orgasm for the second time within half an hour. One female patient said that the headache was particularly likely to occur when she was 'striving toward orgasm'.

Five patients stated that they were aware of excessive muscular contraction, particularly involving the neck and jaw muscles, and found that they could reduce the intensity of the headache by deliberately relaxing those muscles while continuing intercourse or masturbation. The headache always seemed to be related to the degree of sexual excitement, and the selective contraction of neck and facial muscles, not to the amount of physical exertion. One patient, a man aged 30 years, experimented with different techniques to track down the cause of his headaches. He found that the headache came on even when he lay on his back and played a completely passive role. There was no physical exertion at all on his part but he became aware of tension building up in his forehead, jaw, and neck muscles until the headache started about one minute before ejaculation. If stimulation ceased at this stage, the headache eased gradually over five to 10 minutes. If it continued, the headache became very intense and persisted for two to 24 hours after intercourse.

VASCULAR FACTORS

Of the 21 patients, five had a family history of migraine, four of whom had been subject to migraine themselves in the past. The migraine headaches of three of these patients had been frontal in site, unlike their headaches with sexual activity, while the fourth had developed only a sensation of dullness in the head after two hours of right or left homonymous hemianopia. Two other patients had developed headaches on exertion in the past but again these were quite unlike their headaches with sexual intercourse. One had noticed a bifrontal pressure sensation when carrying a heavy load and the other was liable to a right-sided headache lasting for about 10 minutes after strenuous exertion of any kind.

Symptoms suggesting a hyperdynamic circulatory state were encountered by six patients who described a fast heart rate (three patients), throbbing in the ears (one patient), a feeling of heat and flushing in the face (two patients). All of these symptoms were associated with a severe headache starting suddenly before or during orgasm. One patient whose headache was accompanied by palpitations, tremor, and sweating was found to be thyrotoxic on investigation. One patient said that she had once experienced a severe bilateral headache after taking a tablet of the sympathomimetic agent pseudophedrine 60 mg which closely resembled her headache precipitated by orgasm.

Two patients described symptoms like those of cerebral vascular insufficiency with one headache and each had a residual deficit on this occasion. The first patient, a man aged 25 years, has been mentioned earlier because of a very severe occipital headache after his second orgasm within 30 minutes. This was accompanied by vomiting, numbness around the mouth and down both arms, and double vision. These symptoms recovered over the next two days but he noticed that his left hand was clumsy and remained so for about six months. He was subject to mild occipital headaches in the afternoons for several months after this episode. His blood pressure was normal. The second patient with symptoms of neurological deficit was a woman aged 57 years who had developed a bitemporal headache radiating to the vertex on six occasions during sexual intercourse in the previous year. There had been two instances unconnected with sexual activity when she had experienced a similar headache, both precipitated by a severe emotional disturbance. One of these attacks started with palpitations and central chest pain, then the headache increased in intensity over three minutes and became almost unbearable. It was followed by confusion and slight weakness of the right hand which resolved over some weeks. Both she and her brother had a history of migraine associated with right or left homonymous hemianopia. Her blood pressure fluctuated between 130/90 mmHg and 200/120 mmHg. Phaeochromocytoma was excluded by repeated estimations of 24 hour urinary catecholamine excretion which were normal, including one specimen taken after a typical headache. These two case histories suggest vertebrobasilar insufficiency and left carotid insufficiency respectively with residual ischaemic damage. Bilateral carotid angiography was normal in both patients. There is no record of vertebral angiography having been done in the first patient. Another patient aged 57 years had a past history of drop attacks, presumably caused by vertebrobasilar insufficiency, which had not recurred for 18 months when her coital headaches started.

Blood pressure was normal in 14 patients and slightly raised in seven (170/80, 150/85, 130/90, 130/95, 170/105, 150/110 mmHg in ascending order of diastolic pressure).

INVESTIGATIONS

The cerebrospinal fluid was examined in three patients after an episode of headache without any abnormality being disclosed. Radiographs of the skull were normal (eight patients) and of the cervical spine were normal in two cases and showed minor disc degeneration in four patients. Electroencephalography (five patients), isotope brain scan (four patients), bilateral carotid angiography (seven patients), vertebral angiography

(two patients), and urinary excretion of catecholamines (three patients) were all normal. Thyroid function tests were abnormal in one patient.

DISCUSSION

Three of the 21 patients described had experienced symptoms of cerebral vascular insufficiency. The first, a man aged 25 years, developed symptoms of a mild brain-stem infarction when a severe headache followed his second orgasm within 30 minutes. The second, a hypertensive woman aged 58 years, had an episode of carotid insufficiency associated with cardiac dysrhythmia and headache unrelated to sexual activity, while the third had been subject to drop attacks ceasing 18 months before the onset of coital headaches. All three patients and 15 of the other 18 patients have been followed up for two to seven years without any intracranial lesion becoming apparent.

Two varieties of headache can be distinguished from the descriptions given by the patients reported in this communication. The first component coming on with mounting sexual excitation before orgasm appeared to be related to contraction of muscles of the head and neck and could be prevented or relieved by deliberate relaxation of these muscle groups. The second component, more severe and explosive in onset, appeared immediately before or at the moment of orgasm, presumably related to increase in blood pressure at this time. A third type was described by Paulson and Klawans (1974) among their 14 patients with headaches arising during coitus. Three of their patients suffered from postural headache resembling the low pressure headache after lumbar puncture which led the authors to postulate that the arachnoid membrane may have torn during the physical stress of coitus. Paulson and Klawans attributed the headaches of their other patients to vascular dilatation such as may occur in exertional vascular headaches and considered transient increases in systemic blood pressure and muscular spasm as contributing to exertional headaches.

In our patients physical exertion appeared to play no part in the production of the headache. With the exception of two patients, one of whom took no exercise whatever and one of whom experienced a completely different sort of headache on exertion, all the patients had played strenuous games without headache and emphasised that there was no relation between the physical energy expended in sexual intercourse and the development of the headache.

Masters and Johnson (1966) commented on muscular contraction during intercourse. 'In reacting to elevated sexual tension levels, the individual frowns,

scowls or grimaces as facial muscles contract involuntarily in semi spasm'. 'During automanipulation, the jaws frequently are clenched spastically'. 'The muscles of the neck contract involuntarily in a spastic pattern. As the result, the neck is usually held rigidly in mid-position, but with orgasm imminent, minor degrees of opisthotonos may develop'. This pattern of contraction could clearly be responsible for the headache involving the occiput in 14 patients (radiating to the neck in five). Supporting evidence for the mechanism of muscle contraction is the fact that tension headaches had been experienced by 10 patients in other circumstances, the site and nature of the headache being similar in seven of them. Others commented on awareness of excessive muscular contraction during sexual excitement as described earlier.

The vascular aspect of the headache can be separated from that caused by muscle contraction, although it was often superimposed on it. It was abrupt in onset, occipital or generalised, frequently throbbing, intensely severe and sometimes associated with palpitations, resembling the headache of phaeochromocytoma (Lance and Hinterberger, 1976). Masters and Johnson's observations are again of interest. They found that the heart rate increased to 110-180/min and blood pressure rose by 40-100 mmHg systolic and 20-50 mmHg diastolic during orgasm, figures quite comparable with the paroxysms caused by phaeochromocytoma. Littler *et al.* (1974) recorded blood pressure continuously throughout coitus in six male and one female subjects. Blood pressure increased at the time of orgasm, varying from 150/91 to 214/135 mmHg in different subjects. Wolff (1963) described three women patients who experienced severe pain in the head at the beginning of orgasm. In one of these patients the headache appeared to be related to hypertension, as it recurred when the blood pressure rose to 220/130 mmHg at a moment of stress unrelated to sexual activity. The unusual reaction of one patient in this series to the sympathomimetic drug pseudophedrine, producing a headache indistinguishable from her coital headache, supports the concept that increased blood pressure at orgasm may be responsible for the explosive nature of these headaches.

One mystery is the vulnerability of patients to benign sex headache on one occasion and not on another, although technique remained constant. The same phenomenon of episodic susceptibility to trigger factors is observed in migraine and cluster headache ('migrainous neuralgia') and even in tension headache, and thus remains part of a wider unsolved problem.

In conclusion, the development of headache during sexual activity which is bilateral (particularly occipital) in site and accompanied by awareness of excess-

ive contraction of the neck and facial muscles, may reasonably be regarded as benign and may require no special investigations. Explanation of the mechanism is often sufficient to aid the patient in relaxing the appropriate muscles, thus diminishing or preventing the headache. The more severe explosive vascular component may of course require investigation if it is accompanied by focal neurological symptoms or any indication of subarachnoid haemorrhage. Fortunately, the majority of such patients do not appear to harbour any intracranial lesion and reassurance will help them to continue with normal sexual activity in a more relaxed fashion. The development of a dull headache during sexual activity might be regarded as a warning to desist on that particular occasion, since orgasm usually aggravates the headache.

I am grateful to the following physicians and neurologists for referring patients or supplying case histories to help in the elucidation of this syndrome: Drs C. J. Andrews, O. W. Bowering, R. Burns, S. S. Gubbay, P. Hicks, I. Lorentz, R. Mellick, J. B. Morley, R. Rischbieth, G. Selby, M. Thorpe, and P. Williamson.

REFERENCES

- Adams, F. (1848). *The Genuine Works of Hippocrates*, p. 94. Sydenham Society: London.
- British Medical Journal* (1973). Any Questions? **2**, 607.
- Fisher, C. M. (1968). Headache in cerebrovascular disease. In *Handbook of Clinical Neurology*, vol. 5, pp. 147-148. Edited by P. J. Vinken and G. W. Bruyn. North-Holland: Amsterdam.
- Lance, J. W. (1974). Headaches occurring during sexual intercourse. *Proceedings of the Australian Association of Neurologists*, **11**, 57-60.
- Lance, J. W., and Hinterberger, H. (1976). Symptoms of pheochromocytoma, with particular reference to headache, correlated with catecholamine production. *Archives of Neurology (Chic.)*, **33**, 281-288.
- Littler, W. A., Honour, A. J., and Sleight, P. (1974). Direct arterial pressure, heart rate and electrocardiogram during human coitus. *Journal of Reproduction and Fertility*, **40**, 321-331.
- Martin, E. A. (1973). Severe headache accompanying orgasm. *British Medical Journal*, **4**, 44.
- Masters, W. H., and Johnson, V. E. (1966). *Human Sexual Response*, pp. 278, 294. Little Brown: Boston.
- Paulson, G. W., and Klawans, H. L. (1974). Benign orgasmic cephalgia. *Headache*, **13**, 181-187.
- Rooke, E. D. (1968). Benign exertional headache. *Medical Clinics of North America*, **52**, 801-808.
- Symonds, C. P. (1956). Cough headache. *Brain*, **79**, 557-568.
- Wolff, H. G. (1963). *Headache and Other Pain*, pp. 493-494. Oxford University Press: New York.