

Clinical Manifestations of Migraine

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Migraine is a disorder with many clinical manifestations that vary from person to person and often from headache to headache in the same person. Several body organ systems are involved in a migraine attack. It is a condition that is underdiagnosed by physicians and misidentified by persons suffering with headaches. Many individuals with migraine self-diagnose as having sinus headaches or tension headaches. This article discusses the many symptoms of migraine and will help the busy practitioner to better recognize and diagnose this common disorder.

OVERVIEW

Because of the recent development of medications that have specific effects on some of the serotonin receptors believed to play a major role in the migraine syndrome, it is more important than ever to make an accurate diagnosis of migraine. There are no diagnostic tests for migraine, and diagnosis is based on the history of symptoms given by the patient. The diagnostic criteria for migraine pro-

Migraine is an episodic condition. If headache with migrainous symptoms occurs on a daily basis, the overuse of analgesics, opioids, or antimigraine medications such as the triptans or ergotamine tartrate is most likely an important factor. In clinical practice, practitioners will occasionally see a patient who appears to suffer from daily or near-daily migraine that is not associated with the overuse of medication, but this situation is rare.

The neurologic examination of the migraineur should be normal for diagnosed migraine. Transient neurologic symptoms may occur as an aura, but if persistent neurologic findings are present, either the diagnosis of migraine is in question or any abnormalities found may be due to some other condition concomitant with migraine. Laboratory tests and scans may be necessary to rule out other medical or neurologic conditions that might present with migraine-like symptoms. On rare occasions, neurologic deficits may occur during a migraine attack and last for several days or longer. Such defects are usually associated with an appropriately located lesion seen on magnetic resonance imaging or computed tomography. This is

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posed by the International Headache Society (IHS) in 1988 are based solely on clinical symptoms of migraine rather than on any diagnostic tests.

TABLE I.

MIGRAINE
CLASSIFICATION

- Migraine without aura
- Migraine with aura
- Basilar artery migraine
- Migraine aura without headache
- Familial hemiplegic migraine
- Ophthalmoplegic migraine
- Retinal migraine

called a migrainous infarction and is indeed quite rare but certainly does occur.

VARIETIES OF MIGRAINE

There are several types of migraine described in the classification of headache established by the IHS (Table I). The vast majority of migraine headaches are either migraine without aura (common migraine) or migraine with aura (classic migraine). Migraine without aura accounts for 75% to 80% of all migraine. Basilar artery migraine is a rare syndrome that occurs most often in younger persons who have migraine with aura. Symptoms include brain stem and cranial nerve dysfunction such as

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Many physicians as well as patients believe that migraine is a headache that is always preceded by an aura. However, the majority of patients with migraine do not have an aura, but most will have prodromal or premonitory symptoms.

diplopia, dysarthria, tinnitus, vertigo, and transient hearing loss. Syncope occurs in about 30% of those who have basilar migraine, and mental confusion is not uncommon. Less common types of migraine are familial hemiplegic migraine, ophthalmoplegic migraine, and retinal migraine. Hemi-

plegic migraine is migraine associated with hemisensory or hemiplegic symptoms that last for several days. Ophthalmoplegic migraine usually occurs in children and is associated with ocular muscle weakness. Retinal migraine occurs with unilateral visual symptoms and is rare.

Migraine aura without headache usually occurs in older persons who have either migraine or a strong family history of migraine. These patients have typical visual migraine auras or transient neurologic auras but do not develop a subsequent migraine headache. Children may suffer abdominal migraine, which entails episodic nausea, vomiting, or abdominal pain without headache.

AURA AND PRODROMAL SYMPTOMS

Many physicians as well as patients believe that migraine is a headache that is always preceded by an aura, and it is not unusual for patients to be told they do not have migraine because they do not have an aura. The majority of patients with migraine do not have visual aura; however, most patients both with and without aura will have prodromal or premonitory symptoms. Prodromal symptoms occur in 55% to 65% of all migraine sufferers. These are constitutional symptoms and will be present for many hours or even days prior to a migraine attack. These symptoms usually involve disturbances of mood such as irritability, restlessness, fatigue, tiredness, and occasionally hyperactivity. Anorexia or food cravings also may be present. Excessive yawning for several hours preceding the headache is not unusual. Occasionally, hypersensitivity to light (photophobia), sound (phonophobia), or odors (osmophobia) may occur as prodromal symptoms. Patients will often know hours before the attack that a migraine headache is coming.

The aura of a migraine is usually visual, although it may be neurologic. The aura by definition lasts <1 hour, and the headache follows within an hour after the aura clears. Most auras last from 15 to 30 minutes. The most common visual aura is photopsia, or flashing lights, and may take any form. *Fortification spectrum* is the term used to describe the bright zigzag lines sometimes seen in a visual aura. Some persons will have a loss of

vision either as a blind spot (scotoma) or hemianopsia. The blind spot is often surrounded by a bright shimmering border. Distorted or wavy vision is not uncommon. Metamorphopsia, in which objects appear larger or smaller than normal, is a rare visual aura. The typical visual aura starts as a small defect and gradually enlarges or moves across the visual field. The visual defects of the aura are not fixed or static and most are “positive,” with bright colors being seen rather than dark or dim spots.

The most common neurologic symptom presenting as an aura is tingling paresthesia involving the limbs. The tingling typically spreads slowly up or down an extremity and may spread up an arm and move into the tongue. The slow, spreading nature of the tingling is an important characteristic that helps differentiate the neurologic migraine aura from the sudden weakness and numbness that occurs in a transient ischemic attack or stroke. Paresthesias may be bilateral when occurring as an aura in basilar migraine. Disturbances of motor function, such as ataxia and weakness, rarely occur as an aura. The aura of migraine is really quite characteristic, and there are very few other neurologic conditions associated with similar recurring transient symptoms lasting 15 to 60 minutes.

The 15% to 20% of migraineurs who have an aura may be considered fortunate because they have a 20- to 30-minute warning of the impending headache and can take their abortive medication early before the pain starts, which usually results in faster and more complete relief.

Any of the aura symptoms of migraine can occur without a headache. Aura without headache (migraine equivalents, acephalgic migraine) is most common in persons who have had typical migraine headaches with or without aura and often occurs in persons in the 50- to 60-year-old age-group when the headache frequency and severity usually lessens. Occasionally aura without headache will occur in a patient in the 70- to 80-year-old age-group. Visual symptoms are the most common aura, but transient, spreading tingling in an extremity is not uncommon. Even if the symptoms are quite typical, the diagnosis of aura without headache should be made only after ophthalmologic, neurologic, vascular, and abnormal clotting con-

ditions have been excluded. Recurring attacks of transient symptoms with no permanent neurologic deficits suggest this diagnosis.

THE PAIN OF MIGRAINE

The pain of migraine is usually of moderate or severe intensity, but some persons may have only mild head discomfort along with other typical migraine symptoms. If the attacks do not occur frequently, the persons may not seek medical attention

KEY POINT

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because they are not significantly disabled. The painful phase of migraine lasts 6 to 72 hours. On rare occasions, migraine will last much longer (status migrainosus). The pain of migraine headache is typically a pounding, throbbing, pulsatile type of pain, but some patients will describe their pain as more of a pressure or tightness discomfort. The pain is almost always worsened by any physical activity. Bending over, lifting, or stooping are common activities that aggravate the pain. Even walking will worsen the pain in many patients. This aggravation by physical activity is a diagnostic symptom that helps differentiate migraine from tension-type headache. The headache of sinusitis may also be intensified by bending. A migraineur almost always wishes to be quiet and immobile during an attack and often is better off sitting or lying in a semirecumbent position rather than lying flat.

The pounding headache is usually unilateral and located in the frontal or temporal region of the head. It may be centered behind an eye. Some persons will have an overall throbbing headache

rather than a localized area of involvement. It is not unusual for the pain to be on one side of the head one day and then switch over to the other side the next. Although the pain is usually centered around the frontal and temporal areas, it may begin in the back of the head or neck and move forward along one side before it localizes in the temporal area. Rarely will the pain be only in the upper cervical or occipital area. Patients suffering with basilar artery migraine typically will have the most significant pain in the back of the head, although it may also radiate around to the frontal area.

It is not uncommon to have scalp tenderness on the side of the headache. There may be localized edema and induration in the temple area, and periorbital edema may also accompany the attack. If the attack lingers more than a few hours, the neck often becomes stiff and achy, in part due to the sufferer sitting very still and not moving about.

Migraine usually begins in the morning; often it is apparent on awaking and occasionally will awaken the sufferer during the night, although the latter phenomenon is more common in patients with cluster headache. The pain in migraine usually builds gradually rather than hitting abruptly. Migraine that appears on awaking may not respond well to treatment presumably because it has been developing during sleep and is not treated early in the attack.

Brief sharp pains in various areas of the head, called idiopathic stabbing headache, “ice-pick headache,” or “jabs and jolts,” are common. These pains may occur between the more typical migraine attacks. They last only seconds and may hit repetitively in one spot of the head or in various locations and then spontaneously subside.

ASSOCIATED SYMPTOMS OF MIGRAINE

Symptoms associated with migraine are outlined in **Table II**. Gastrointestinal (GI) symptoms are common in migraine, and nausea is the single most common symptom other than headache. Surveys have shown that about 85% of migraine sufferers complain of nausea. Nausea may precede the painful phase of migraine. Many patients also have vomiting, which can be severe enough to lead to

TABLE II.

COMMON MIGRAINE-ASSOCIATED SYMPTOMS

- Nausea and vomiting
- Photophobia
- Phonophobia
- Osmophobia
- Dizziness
- Impaired cognitive function
- Visual distortion
- Diarrhea
- Fluid retention

dehydration. The nausea and vomiting may be more disturbing and disabling than the pain, although it is not unusual for patients to claim that the pain is temporarily lessened by vomiting and retching. Gastric stasis has been demonstrated to be present even if vomiting does not occur. The vomiting and gastric stasis may cause a problem if the patient tries to abort the headache with oral medication. Medication by mouth may not be very effective, and its action may be delayed. Most migraineurs are anorexic during the attack even if nausea is not prominent. Diarrhea and upper GI symptoms are not uncommon during a migraine attack. Nausea and vomiting, like the headache, are aggravated by the patient moving about.

The sensory organs become hypersensitive during a migraine attack. Any external stimulus seems to bother the migraineur during or prior to an attack. Photophobia and phonophobia, like nausea, may actually precede the attack of pain. Some migraine sufferers will experience hypersensitivity to light even between attacks of migraine and find it necessary to wear dark glasses when they go outside during the day. During a migraine attack, a sufferer will usually sit quietly in a very dark room and avoid moving about. This situation may often cause problems at home, especially with a mother who has young children.

Many patients have difficulty with concentration during a migraine attack and dizziness and

light-headedness are not uncommon as well as true vertigo. Episodic vertigo is felt to be a migrainous phenomenon if inner ear and neurologic causes have been ruled out (migraine aura without headache). Vertigo is more likely to be associated with basilar migraine. Fatigue is very common during the attack and often lingers for 1 or 2 days after the pain subsides—this is sometimes called the postdromal phase of migraine. Other symptoms include skin pallor with cold, clammy hands and feet. Patients may also have waves of hot and cold sensations. Generalized fluid retention occasionally accompanies an attack followed by diuresis as the migraine clears.

Because migraine is a condition in which there is a disturbance or instability of the autonomic nervous system, many persons with migraine have associated conditions related to vasomotor instability. Urticaria and dermatographism are more common in migraine patients. Migraineurs seem to flush and blush more easily. Raynaud's disease (primary benign, not secondary) is more common in persons with migraine. Vasomotor rhinitis, which causes nasal congestion, is quite common and probably accounts for the frequent diagnosis of "sinus headache" in persons who have typical migraine. In this condition the nasal membranes are congested and reddened, whereas in allergic rhinitis they are congested and pale.

THE HORMONAL CYCLE AND MIGRAINE

The hormonal cycle has an effect on migraine in the majority of women who suffer from this condition. Migraine begins in many women about the time of menarche. Many women will note that they always have a migraine attack around their menstrual period. Sometimes it occurs every month on a specific day, for example, the day before or the day after the menstrual flow begins. The term *menstrual migraine* has been used to describe a migraine that occurs only at menses. Many women with menstrual migraine can plan their schedules around their headache attacks if their periods are quite regular. It is also not unusual for women to note that a migraine attack will occur at the time of ovulation.

In many women, the menstruation-related headache seems to be more intense and less respon-

sive to treatment compared with attacks occurring at other times of the month. Premenstrual symptoms such as irritability and fluid retention as well as hormonal fluctuations may play a role in causing the headache to be more intense. With the low-dose oral contraceptives in use today, there does not appear to be as much exacerbation of migraine as in the past when they contained higher doses of estrogen. The newer oral contraceptives, which contain varying lev-

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els of estrogen, probably should be avoided by migraineurs because they may not be well tolerated and may aggravate migraine, although this has not been proved. Any oral contraceptive should be used with caution by the migraineur, as with any other patient, if there are risk factors for stroke such as hypertension, smoking, and obesity.

Typically, during pregnancy those women with menstrual migraine will have less headache, especially after the first trimester. Some women are completely free of migraine attacks during pregnancy and may even have little morning sickness—they often state they feel great during the pregnancy. There are some women, however, who have an exacerbation of their attacks during pregnancy, and this can cause problems in the treatment and management of their migraine.

Most migraineurs will have less frequent and less severe attacks of migraine as they grow older. This is particularly true of women with menstruation-related migraine, and most are less disabled by migraine attacks after menopause. During menopause when there is much fluctuation of hormones with hot flushes, sweating, and mood instability, there may be increased migraine activity. Hormone replacement therapy usually does not increase

migraine activity as long as the estrogens are given at a low, stable dose on a daily basis.

TRIGGERS OF MIGRAINE

Many factors can trigger an attack of migraine (Table III). Perhaps the most common trigger in women is the menstrual cycle. The percentage of women whose migraine is associated with menses is probably >60%, and attempts to treat migraine with various schemes of hormonal manipulation have not been very successful.

For many years there has been much written about the influence of various dietary factors on migraine. Although many practitioners hand migraine patients a list of foods to avoid, it is usually more worthwhile to have the migraineur keep a diary of all foods eaten in the 24 hours prior to an attack of migraine. The vast majority of migraine sufferers do not have any specific food triggers, but for those who do, eliminating offending substances from the diet will reduce the frequency and severity of the attacks. Recent attempts to identify specific chemical substances in food that might act as triggers have brought about conflicting results. Choc-

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olate, aged cheeses, and red wine have long been recognized as the most common food triggers, and alcohol in any form is likely to induce migraine in some people. Chemical preservatives such as nitrites may also trigger migraine.

Weather is a frequent trigger of migraine. In the older headache literature it is rarely mentioned, but in talking with migraine patients, I have found it to be one of the most frequently recognized triggers. There have been a few studies done to evaluate whether barometric pressure, humidity, pollutant particles, temperature change, winds, or other fac-

TABLE III.

COMMON MIGRAINE TRIGGERS

- Hormonal cycle
- Volatile weather
- Foods and food additives
- Hunger
- Irregular sleep pattern
- Glare and flickering light
- Odors

tors play a role in triggering a migraine attack, but to date no significant data have been accumulated. Most patients will state that a weather front with falling barometric pressure or rapid temperature change is the usual weather-related trigger. It is not unusual for migraineurs to “predict” the weather as they note prodromal symptoms or even the actual onset of headache several hours before an abrupt weather change occurs. High altitude frequently will trigger a migraine attack as will airplane travel, and a combination of low air pressure, disturbance in the regular eating and sleeping schedule, and excitement and stress may contribute to the attack.

People who suffer from migraine do better by keeping to a fairly regular schedule. Skipping meals will commonly bring on migraine. Being overtired is another trigger. Many migraines occur on weekends (“weekend headache,” “letdown headache”) when regular schedules are not kept. For example, migraine will often hit during the first few days of a vacation when there is a variation of the usual schedule. It is common for migraineurs to note that they function well under severe stress (unlike those with tension-type headache), only to suffer a siege of migraine attacks once the stress lessens.

Some migraine sufferers are extremely sensitive to bright glare, for example, the shimmering of sun on water or the strobe effect of intermittent sunlight while driving under trees. Odors and fumes can also set off an attack, for example, walking by the perfume counter in a department store or filling up the car at a gasoline station.

When a patient complains that the migraine headaches have become more frequent or more

severe, it is important to look for other factors that might be aggravating the migraine pattern. One of the most common aggravating factors is stress or depression. Medical conditions such as hypertension or endocrine diseases can also alter the usual migraine pattern. Some migraineurs will become almost obsessed with trying to pinpoint the cause of their attack. It is important to remind these patients that migraine is an inherited condition for which there is presently no cure.

SUMMARY

Migraine is a common disorder that is often underdiagnosed. Most persons suffering with migraine do not have an aura, but many have prodromal symptoms. Migraine has a wide variety of associated symptoms. In addition to pain, the most common symptoms are nausea, with or without vomiting, and the aggravation of symptoms with normal physical activity. With the new antimigraine drugs that are now available, many patients with migraine can obtain prompt relief of their symptoms with minimal side effects.

SUGGESTED READING

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Dialogue Box

ADVISORY BOARD

Is daily migraine secondary to analgesic abuse the same entity as analgesic rebound headache?

KUNKEL

No one is certain as to the cause of analgesic rebound headache, but daily migraine due to analgesic abuse probably has the same mechanism as analgesic rebound. If the daily headache is purely migraine, which is unusual, daily ergotamine tartrate or triptans are more likely to be a factor, and the rebound from these agents is probably different from analgesic rebound.

ADVISORY BOARD

Is the visual aura seen in migraine headache always a binocular phenomenon?

KUNKEL

Nothing in medicine is “always,” but the visual aura is almost always bilateral. Unilateral symptoms would suggest a retinal problem.

ADVISORY BOARD

Does the slow, spreading nature of paresthesia differentiate it from another central event such as a transient ischemic attack (TIA)?

KUNKEL

The slow, spreading paresthesia of migraine is helpful in differentiating it from a TIA. Usually with a TIA, the symptoms (paresthesia or weakness) hit abruptly. Also TIA symptoms tend to last 2 to 5 minutes, whereas migraine symptoms linger for 10 to 30 minutes.



Dialogue Box

ADVISORY BOARD

Is there a proactive way of making the diagnosis of acephalgic migraine in migraineurs presenting for the first time with only visual symptoms?

KUNKEL

If visual symptoms have never occurred previously in an individual with long-standing migraine, a workup needs to be done to exclude vascular disease and clotting disorders. A transcranial Doppler study may be helpful in excluding significant vascular lesions. The diagnosis of aura without headache is made after excluding other causes.

ADVISORY BOARD

What is the causative mechanism for the development of localized edema and induration in the temple and periorbital areas seen in some migraineurs?

KUNKEL

The edema, induration, and tenderness in the temple and periorbital areas are due to release and extravasation of bradykinin, histamine, and other vasoactive substances from the walls of the blood vessels. These agents account for the painful pulsation felt in migraine. The vascular dilation after exercise is not painful, but dilation with migraine is.

ADVISORY BOARD

Is the treatment for idiopathic stabbing headache the same as for migraines?

KUNKEL

If it occurs frequently, the best treatment is with an NSAID. The other preventive drugs for

migraine— β -blockers, calcium channel blockers, tricyclic antidepressants—are not very effective. The antiepileptic drugs, as well as the NSAIDs, may be helpful for both conditions. Usually the sharp attacks are sporadic and don't require daily preventive medication. They are too brief to treat with any abortive medication.

ADVISORY BOARD

Can female migraineurs with aura safely take oral contraceptives (OCs)?

KUNKEL

With the newer OCs having significantly less estrogen, it is generally safe to use them in migraine with typical visual aura. If significant neurologic symptoms are part of the aura, I would use them with caution. If other risk factors such as hypertension, smoking, and obesity are present, I would not add OCs in a patient with migraine with aura.

ADVISORY BOARD

Is there any evidence that extended-cycle OCs are associated with improvement of migraine?

KUNKEL

I know of no studies on the extended-cycle OCs, but many physicians have used the active OCs on a continuous basis for 2 to 3 cycles in women with severe menstrual migraine, thereby causing the headache to occur every 2 to 3 months rather than every month. Menstrual migraine is often less responsive to the usual migraine treatments and reducing the frequency by taking OCs is often helpful.