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Hormonal contraception and headaches

What are the prescriber's options?

Abstract: This article will review evidence-based hormonal contraception prescribing options in the primary care setting for reproductive age women who experience headaches. Safe prescribing of hormonal contraception requires the nurse practitioner to be able to differentiate between the common primary headache phenotypes, such as the migraine and the tension-type headache.

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Headaches are the most common neurologic complaint seen in primary care.[1] Even though migraine headaches are three times more common in women than men,[2] 25% of migraine headaches are misdiagnosed.[3] Sixty-two percent of reproductive age women in the United States currently use contraception.[4] Of the women who use contraceptives, 64% use hormonal methods, such as combined hormonal contraception (CHC), implants, and injectables.[4] Furthermore, combined oral contraception (COC), or "the pill," continues to be the most popular method of contraception in the country, being used by 28% of the women who use contraception.[4] With the high prevalence of female migraineurs of reproductive age requesting hormonal contraception, the primary care nurse practitioner (NP) caring for this population must elicit a health history, allowing for the differentiation of the common headache phenotypes, to guide safe contraception prescription practices. CHC usage is not recommended for women who experience migraines with aura or women over age 35 that experience migraine without aura due to an increased risk of a cardiovascular event.[5] While differentiation between the different primary headache classifications may be difficult, it is medically necessary.

Prevalence of headaches

Headaches are a common complaint in primary care. The prevalence of migraine headaches in women seen in primary care in the United States is 43%.[6] This number is greater than the general population of women, where the prevalence is 18%.[7] Moreover, as many as 50% of migraineurs are undiagnosed due to self-treatment.[1] The prevalence of migraine changes in each decade of a women's reproductive life: 22% ages 20 to 24 years; 28% ages 25 to 29 years; 33% ages 30 to 34 years; 37% ages 35 to 39 years; 40% ages 40 to 44; and 42% ages 45 to 49.[6] When the presenting complaint to the primary care provider is headache, 94% meet the diagnostic criteria for a migraine diagnosis[3]; however, it is

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common for the provider to fail to recognize the headache as a migraine.[2,8] Interestingly, tension-type headaches (TTHs) are more common than migraines in the general population,[9] but patients tend to self-treat and do not seek medical care.

International Classification of Headache Disorders categories

The recently released International Classification of Headache Disorders Third Edition Beta (ICHD-3 Beta) from the International Headache Society (IHS) divides headaches into two categories: primary and secondary. Migraine is one of four headache phenotypes listed in the primary headache category; the other three are tension-type headaches, trigeminal autonomic cephalalgias (such as cluster headaches), and other primary headaches.[9] A primary headache is idiopathic, as the cause is not associated with a known disorder. A secondary headache is associated with underlying pathology, such as traumatic, infectious, metabolic, oncologic, or inflammatory sources.

Although the clinical features of the headaches are specific, a patient who does not meet all of the criteria does not rule out the migraine diagnosis.

The ICHD, originally designed to standardize research criteria, has become an important diagnostic tool for the healthcare provider by serving as a reference to differentiate between the primary headache phenotypes, which include migraines and TTHs.[9] Safe prescribing of hormonal contraception depends on a correct headache diagnosis. If unable to differentiate between the primary headache phenotypes when considering the use of CHC, the NP needs to refer to neurology.

Differentiation of headache types

Because differentiation between the primary headache phenotypes can be difficult, committees of experts in the field of headache research and practice gathered to write the original ICHD in 1988 with the intent to standardize research criteria. The current (third) edition serves as a reference for both the research and the clinical communities. Although the clinical features of the headaches are specific, a patient who does not meet all of the criteria does not rule out the migraine diagnosis. For example, the criteria state migraine headache has a unilateral location, but only approximately 50% of migraine patients experience unilateral pain.[1]

The migraine headache is always associated with more than just a headache, meaning there are other associated symptoms, such as nausea and/or vomiting or photophobia and phonophobia. The ICHD-3 Beta divides migraines into two subgroups: the migraine without aura and the migraine with aura.[9] In both types, the patient may experience a premonitory phase in the hours before or up to 2 days prior to the attack. Symptoms of the premonitory phase include fatigue, hyperactivity, difficulty in concentrating, yawning, neck stiffness, sensitivity to light and sound, food cravings, and nausea. After the headache resolves, some patients also experience a resolution phase in which characteristics similar to the premonitory phase occur. In addition, patients may experience more than one type of migraine or change categories over time.

Approximately 75% of migraines are the without aura subtype.[9] A recurrent headache lasting 4 to 72 hours is a migraine without aura criteria. Associated characteristics include a frontotemporal unilateral location of pain with a pulsating quality in which routine physical activity, such as climbing stairs or bending over, aggravates the headache. Moderate-to-severe pain, associated nausea, phonophobia, and vomiting and/or photophobia are also migraine without aura criteria. According to the ICHD-3 Beta criteria, the patient must experience at least five attacks and fulfill the diagnostic criteria in order to establish the diagnosis of migraine without aura (see *The IHS diagnostic criteria for migraine and TTHs).*[9]

Episodic, chronic, and menstrual are subtypes of migraine without aura. The distinction between episodic and chronic migraines is arbitrary, based on the number of headaches per month. According to the ICHD-3 Beta, the definition of a chronic migraine is a headache occurring on 15 or more days per month for more than 3 months.[9] Episodic migraines occur less than 15 times per month. For women, the migraine without aura has a strong temporal association with the menstrual cycle. According to the ICHD-3 Beta, there are two distinct menstrual migraine phenotypes: the pure menstrual migraine and the menstrual-related migraine.[9] The pure menstrual migraine occurs 2 days before the menstrual flow or 3 days into the menstrual flow in at least two out of three cycles. The menstrual–related migraine also occurs 2 days before the menstrual flow or 3 days into the menstrual flow, but the migraine headache may occur at other times of the month. Patients who are aware of the association between the headache and the menstrual cycle commonly seek treatment from their obstetrical/gynecological providers. Although predictable, the menstrual migraine is difficult to treat; they

are prolonged, resistant to acute treatment, and more severe than other migraine phenotypes.[2] The differentiation of the pure menstrual migraine and the menstrual-related migraine is important: hormone prophylaxis is likely to be more effective with the pure menstrual migraine.[9]

Both the natural menstrual cycle endometrial shedding (as regulated by the endogenous hormones in the hypothalamic-pituitary-ovarian axis) and the shedding, which occurs when exogenous hormones are stopped (as with CHC and hormone replacement therapy) can result in a migraine headache. In these two distinct instances, the migraine triggers, and their treatment strategies differ.

While less prevalent than the migraine without aura, migraine with aura is associated with cardiovascular events, such as stroke.[10] The migraine with aura ICHD-3 Beta classifications includes at least two occurrences lasting 4 to 72 hours and shares characteristics as the migraine without aura, such as frontotemporal unilateral pain, which is moderate-to-severe in intensity.[9] As with the migraine without aura, routine physical activity exacerbates the headaches and either nausea and/or vomiting or photophobia, and phonophobia must be present. An aura is a fully reversible focal neurologic event consisting of one or more visual, sensory, speech, motor, or brainstem symptoms. Classically, the aura develops gradually and occurs before the headache. Occurring immediately prior to the onset of the headache, the aura has specific sensory characteristics lasting at least 5 minutes, but no longer than 60 minutes. The ICHD-3 Beta criteria for aura include at least one of the following: fully reversible visual symptoms, such as flickering lights, spots, lines, or vision loss, fully-reversible sensory symptoms such as paresthesias of the body or face in varying sized patches, and fully-reversible dysphasic speech.[8] The visual aura is the most common aura, which often begins as an undulating zigzag convex-line that travels across the visual field growing in length. The NP should be careful not to confuse the premonitory symptoms, which commonly occur prior to a migraine with an aura.

The TTH may be difficult to distinguish from the migraine without aura headache. Although the exact mechanism of causation is unknown, the TTH is not associated with an increased stroke risk.[5] Although the TTH is the most common primary headache phenotype with significant socioeconomic impact, many patients self-manage and do not seek medical care.[9] The TTH improves with sleep, analgesics, and relaxation. Lasting from 30 minutes to 7 days, the infrequent episodic TTH has at least two of the following pain characteristics: bilateral location, pressing or tightening nonpulsating quality, mild-to-moderate intensity, and is not aggravated by routine physical activity. The patient may have anorexia, but no nausea or vomiting. Photophobia or phonophobia may occur, but not

The IHS diagnostic criteria for migraine and TTHs

Migraine without aura

At least five attacks lasting 4-72 hours (untreated or unsuccessfully treated), and

1. Has at least 2 of the following characteristics:
   - Unilateral location
   - Pulsating quality
   - Moderate-to-severe pain intensity
   - Aggravation by routine physical activity
2. During the attack, at least one of the following criteria:
   - Nausea and/or vomiting
   - Photophobia and phonophobia
3. No other disorder is likely to be responsible for the headache.

Migraine with aura

Meets the criteria for migraine without aura and at least two attacks with at least one of the following fully-reversible findings:

1. Aura, with at least one fully-reversible finding from the following symptoms:
   - Visual: flickering lights, spots, or lines, or loss of vision
   - Sensory: pins and needles or numbness
   - Speech disturbance: dysphasic
   - Motor: hemiparetic limb weakness
   - Brainstem: double vision, vertigo, tinnitus, dysarthria
2. At least two of the following other characteristics:
   - Visual symptoms
   - Unilateral symptom
   - At least one aura symptom develops over 5 minutes
   - Each symptom lasts over 5 minutes and less than 60 minutes
3. Headache develops during the aura or follows within 60 minutes
4. No other disorder is likely to be responsible for the headache

Infrequent episodic tension–type headache

At least 10 occurrences averaging less than 1 per month and the headache lasts from 30 minutes to 7 days, and

1. Has at least two of the following characteristics:
   - Bilateral location
   - Nonpulsating pressing or tightening quality
   - Mild or moderate in intensity
   - Not aggravated by routine physical activity
2. Has both of the following:
   - Absence of nausea or vomiting, but anorexia may occur
   - Either photophobia or phonophobia
3. No other disorder is likely to be responsible for the headache

Source: Headache Classification Committee of the International Headache Society. The international classification of headache disorders: third edition 2013. http://217.174.249.183/upload/Common1/ICHD-III%20beta-Cephalalgia%20issue%209%202013.pdf.

U.S. Medical Eligibility Criteria for Contraceptive Use[5]

Modified from the World Health Organizations Medical Eligibility Criteria (MEC) 4th Edition, The U.S. MEC for Contraceptive Use, 2010 provides easily-accessible, current, evidence-based recommendations concerning contraceptive methods for women with various characteristics and medical conditions. Available online through the CDC website, the document helps guide healthcare providers in determining safe contraceptive choices.

Presented in a table format, the U.S. MEC considers approximately 60 different patient characteristics, including age, parity, or a preexisting medical/pathologic condition, such as headache, diabetes mellitus, or seizure disorder when choosing a contraceptive method. Each contraceptive method is assigned one of four safety categories; furthermore, the U.S. MEC lists the category for both initiating and continuing the contraceptive method.

The categories rank the safety risk of the contraceptive method in relation to the characteristic or medical condition:

Category 1 represents no restriction in use of the contraceptive method.

Category 2 reflects the benefits of the method generally outweigh the proven or theoretical risks, but the patient requires close follow up.

Category 3 indicates the risks usually outweigh the benefits and the method is not recommended unless an alternative is not acceptable or available.

Category 4 states use of the contraceptive method poses an unacceptable health risk.

Although there is much to consider when helping a patient determine the best contraceptive choice, the US MEC focus on safety is a valuable tool.

both. Abnormal tenderness to palpation of the frontal, temporal, masseter, pterygoid, sternocleidomastoid, splenius, and trapezius muscles also may be present in the TTH. There is no relation to the menstrual cycle, and exogenous hormones have no effect on the frequency or severity of the TTH.

If the headache phenotype diagnosis is unclear, a headache diary is useful. The diary, in which the patient documents the headache characteristics and patterns, often helps elucidate the situation.

Contraceptive considerations

Regardless of the diagnosis of a primary headache, many women require effective contraception until menopause. Despite the growing number of available hormonal contraceptive choices, the oral contraceptive remains the most popular choice. The contraceptive patch and the vaginal ring contain the same active estrogen component, albeit a different mode of delivery. CHC include the COC, the contraceptive patch, and the vaginal ring. These delivery systems warrant the same clinical considerations when prescribing to the woman with a primary headache diagnosis.

In a systematic review, Edlow and Bartz examined the risk of stroke in the CHC user and found substantial evidence that migraine with aura is associated with an increase in the relative risk of ischemic stroke.[10] There is conflicting evidence in the setting of migraine without aura if the risk of stroke is increased. Furthermore, the authors also examined the risk of stroke in the migraine patient who uses CHC. The migraineur who uses CHC has 6.6 to 13.9 times the odds of having an ischemic stroke than that of a migraineur who does not use CHC. If the migraineur uses CHC and smokes, she has 34.4 times the odds of having an ischemic stroke than a migraineur who does not use CHC or smoke. With that said, the absolute risk of a woman of reproductive age experiencing a stroke is still low, as the incidence rate is 5 to 11.3 ischemic strokes per 100,000 women per year.[10]

U.S. Medical Eligibility Criteria for Contraceptive Use, 2010[5] provides evidence-based recommendations for prescribing contraception to the primary headache patient (see *U.S. Medical Eligibility Criteria for Contraceptive Use*). For the woman who is less than 35 years old and experiences migraine without aura, initiating a CHC is a category 2. The benefits of the CHC generally outweigh the proven or theoretical risks, and close monitoring is required. If the patient's migraine changes in character or frequency, the use of CHC changes to a category 3, which states the risks usually outweigh the benefits, and unless there is no other acceptable alternative, the CHC should be discontinued. If the patient who experiences migraines without aura is over 35 years old, CHC are a category 3. A category 3 contraceptive requires careful clinical judgment. If the character or the frequency of the migraine changes in the follow up, use of CHC changes to a category 4, where the health risk is unacceptable, and the NP needs to discontinue the CHC. If the patient experiences migraines without aura regardless of age, the progesterone-only pills (POP), depot medroxyprogesterone acetate (DMPA), the implantable progestin rod, and both levonorgestrel-releasing intrauterine device (IUD) and the copper IUD are a category 1 or 2.[5]

If the patient experiences migraines with aura, regardless of age, use of CHC poses an unacceptable health risk and is always a category 4. Initiating the POP, DMPA, the implantable rod system, or an IUD for patients who experience migraines is a category 2. If the migraine changes character or frequency, use of the POP, DMPA, the implantable rod system, or an IUD then changes to a category 3.

If the patient experiences TTH, the NP can prescribe any CHC regardless of the headache severity or frequency.

Progesterone options such as the POP, the implantable progesterone rod, DMPA, and both the IUDs are not restricted for patients experiencing TTH.[5]

Regardless of the primary headache phenotype, the NP needs to consider the patients' health history. Coexisting medical conditions such as smoking, hypertension, obesity, diabetes mellitus, and hyperlipidemia may further increase the risk of stroke in the CHC user when prescribing CHC.[10]

Moving forward

NPs who provide care to women of reproductive age experiencing primary headache phenotypes need to be fully aware of the implications of prescribing hormonal contraception. The ICHD-3 Beta provides valuable clinical guidance, enabling NPs to differentiate between common headache phenotypes, which is essential, appropriate hormonal contraception prescribing. As hormonal contraception is the most popular method of contraception in the country, the U.S. Medical Eligibility Criteria for Contraceptive Use, 2010 provides evidence-based recommendations for contraception use in women who experience primary headaches.

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