

## **Management of chronic headache during pregnancy**

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Headache is a common complaint during pregnancy. Changes in hormonal levels can result in new onset headache for some women and alterations in previously-existing headache patterns for others. In general, estrogen acts as a pain-modulating messenger, resulting in reduced pain perception as estrogen levels rise. This link between estrogen and pain control is important to reduce the severity of discomfort associated with childbirth. Believe it or not, without the pain-controlling effects of estrogen, delivery would be an even more painful experience.

Although all women experience a dramatic rise in estrogen levels, starting in the first trimester and then reaching a plateau during the second and third trimesters, not all women experience the expected reduction of headache pain during pregnancy. A recent study showed that 57% of pregnant women experienced a reduction in headache activity by at least half during the first trimester, with about 85% noting significant reduction during the second and third trimesters. An earlier study of 30 women who were still having headaches at the end of their first trimester showed only 30% additional reduction in headache activity during the second and third trimesters. Improvement was slightly better for women with migraine compared with tension-type headache. Taken together, these studies show that chronic headache will improve for most women during pregnancy, however, if women are still having headaches at the end of their first trimester, they are unlikely to experience substantial further improvement during the remainder of pregnancy. Women continuing to have problems with headaches at their first obstetrical visit, therefore, should discuss headache treatment with their doctors rather than expect additional spontaneous headache improvement.

### ***Why don't headaches improve for all women with pregnancy?***

Headache symptoms occur as the result of changes in the brain and nervous system, muscles and joints, blood vessel tone, and psychological variables. Although changes in estrogen reduce activity of pain-activating nerve messengers with pregnancy, estrogen also influences other organ systems with resultant increase in headache susceptibility. Under the influence of high estrogen, blood vessels are more susceptible to constriction and joints are more flexible and lax, both conditions that increase risk of headache activity. Other physiological, psychological, social, and lifestyle changes with pregnancy (swelling, mood irritability, fatigue, sleep disturbance, nausea and poor nutrition) may also aggravate pre-existing headache disorders. For the individual woman, changes in headache in response to these many variables may result from the overall balance of changes that reduce headache activity and changes that aggravate headaches. (See Figure.) Finally, women who were successfully using preventive headache medications (such as antidepressants or antiseizure medications) may be asked to discontinue medications during pregnancy. For many women, headache activity does not increase immediately after discontinuing effective therapy, but return of previous headaches may be delayed for several weeks or months.

In addition, women often report different headache patterns with different pregnancies. Although headaches may have resolved with the first pregnancy, they may continue or even worsen during a later pregnancy. The reasons for this are not entirely clear. The body may experience a different response to pain-modulating effects from estrogen, or the presence of additional factors, such as increased stress, fatigue, and sleep deprivation associated with caring for a child during this second pregnancy.

***How can I safely treat use headaches during pregnancy?***

There are a wide variety of safe and effective medication and non-medication treatments to be used during pregnancy. (See side bar 1.) Many non-pharmacological treatments are as effective as standard headache medications, without concern for side effects for mother or baby. Well-studied treatments like relaxation, biofeedback, cognitive restructuring, and stress management are as effective as standard headache preventive medications. (See side bar 2.) Studies consistently show that medication treatment is enhanced by concomitant use of non-pharmacological therapies. Stretching exercises also offer effective supplemental therapy, especially for patients noting neck pain or tightness with headache episodes. The period during planning for pregnancy is an ideal time to develop and master these effective headache management techniques.

Some lifestyle modifications may also benefit some people with headache. Those that are also healthy living strategies should be used during pregnancy, such as avoiding skipping meals, discontinuing nicotine, alcohol, and excessive caffeine, maintaining a regular sleeping cycle, and maintaining low-impact exercise activities. Dietary restriction tends to reduce headache for only about 30% of chronic headache sufferers. In addition, dietary restrictions often limit foods that provide important nutrients for the baby and mother during pregnancy. Because of the low likelihood of headache improvement and concern for maintaining adequate nutrition, restrictive diets should not be initiated during pregnancy or breastfeeding.

***What medications are safe to use during pregnancy?***

Although most women will say they try to avoid medications while pregnant, surveys show that up to one-third of women self-medicate for health symptoms during pregnancy, especially with analgesics. Therefore, it is important to establish a plan for safe medication use during pregnancy. As for all headache sufferers, pregnant women must avoid using acute care medications too frequently or as preventive headache therapy, or they may develop analgesic-overuse or rebound headaches. Acetaminophen, short-acting opioids, and anti-nausea medications are safe acute care medications when used infrequently. Nonsteroidal anti-inflammatory medications (NSAIDs) should be avoided during attempted conception because they can prevent implantation of the fertilized egg on the uterus. Two recent studies in Denmark and California linked NSAID use with a higher risk for miscarriage. NSAIDs are also discontinued after the 32<sup>nd</sup> week of pregnancy because of their effects on slowing normal development of the heart. There are no established effects of triptan use during pregnancy. Voluntary registries of women using triptans during pregnancy collected in the United States have not identified negative consequences to the baby from this exposure, although only a few hundred

pregnancies have been observed. Two large European observational studies have suggested a possible link between triptan use during pregnancy and early delivery and lower birth weight. Lack of any serious side effects identified with the currently available triptan exposures should provide reassurance for women who inadvertently use their triptan, especially prior to becoming aware that they are pregnant. The relatively small number of women who have used triptans during pregnancy, however, prevents confidence that triptans should be used routinely during pregnancy until more data are available.

A number of preventive medications may also be used during pregnancy for women with frequent and disabling headaches. Beta-blockers, such as propranolol, have been most widely used during pregnancy as they are also a medication of choice for the management of high blood pressure during pregnancy. Most obstetricians are comfortable with prescribing beta-blockers. Other preventive therapies, such as some antidepressants and gabapentin in early pregnancy, may also be considered. Most other preventive medications have not been used in enough pregnant women to be confident that their use is safe. A few, like valproate, result in high risk for serious side effects to the baby and are not usually recommended during pregnancy.

#### ***Will breastfeeding impact headache activity?***

Women often notice a return of typical headache activity within a few days to weeks after delivery. This coincides with return of headache-protective estrogen to more normal levels. It is important to discuss strategies with your doctor for managing headaches after delivery.

There are a number of case reports in the literature that describe headache worsening or improving in association with breastfeeding. The largest study, however, catalogued changes in headache with breastfeeding in 2,500 migraineurs over a 6-year period. In this study, breastfeeding altered headache patterns for only 5 women. Therefore, women migraineurs should not be discouraged from breastfeeding because of concerns about headache aggravation.

Medication use, however, will continue to be restricted while breastfeeding. Most medications that can be safely used during pregnancy can also be used while breastfeeding. Sumatriptan can be used during breastfeeding if women refrain from breastfeeding for about 4 hours after taking an injection of sumatriptan, and pump and discard the milk. Feedings may be supplemented with stored or bottled milk. Breastfeeding can then resume with the next feeding.

#### ***When should I be worried about headache during pregnancy?***

Anytime there is a significant change in headache pattern, the development of a new headache, or failure of previously effective therapies to relieve your headache, you should seek consultation with your doctor. A variety of health problems can be aggravated with pregnancy, such as clotting, autoimmune diseases, etc., so changing headache patterns should always result in an evaluation with your health care provider.

Significantly changed or new headaches, especially when accompanied by symptoms that suggest additional medical or neurological abnormalities or an abnormal physical examination, may require additional testing. Generally, tests that have exposure risks for the baby are avoided during pregnancy, unless they are being conducted to identify a problem that would be treated during the pregnancy. Physical examinations, blood tests, and even spinal fluid examinations are safe to perform during pregnancy. When an imaging study of the brain is necessary, the American College of Radiology recommends magnetic resonance imaging (MRI) without contrast during pregnancy to avoid exposure to ionizing radiation. Studies of toddlers exposed to MRI testing during pregnancy and the offspring of female MRI technicians have not identified significant health problems in these children.

***When should I start thinking about headache management with pregnancy?***

Because many women do not realize they are pregnant until several weeks or months into the pregnancy, women who are attempting conception or are sexually active without adequate and consistent use of birth control should utilize the same precautions used for women in early pregnancy. Fortunately, the same medication and non-medication treatments work for headache before, during, and after pregnancy. Early use of effective headache management before pregnancy should result in reduced pain and disability both during pregnancy and after the baby is born.

Side bar 1.

**Safe treatments during attempted conception and pregnancy**

Non-pharmacological treatments

- Relaxation
- Biofeedback
- Stress management
- Discontinue nicotine
- Discontinue alcohol
- Discontinue caffeine
- Eat regular meals
- Maintain regular sleeping patterns

Acute medications

- Do not regularly use acute care medications >2 days/week
- Acetaminophen
- Short-acting opioids
- Anti-nausea medications

Preventive medications

- Beta-blockers
- Selective serotonin reuptake (SSRI) antidepressants
- Bupropion

- Gabapentin in early pregnancy

Side bar 2.

### **Non-pharmacological treatments**

#### Relaxation

- Relaxation techniques should be learned while sitting in a comfortable chair, with arms and legs uncrossed, feet flat on the floor, and eyes closed. Each practice session should last for about 15-20 uninterrupted minutes. Once you have regularly practiced and mastered these techniques, you will be able to use them whenever you feel yourself starting to tense or in anticipation of stress.
- Progressive muscle relaxation involves alternatively contracting and relaxing muscles throughout your body. Close your eyes and practice first tensing and then relaxing individual muscles in different parts of your body, starting at your feet and moving toward your neck and face). Hold the tension for 10-15 seconds, and then release it. Tense and release the muscles in your legs, then abdomen, then arms, then shoulders, then neck, then jaw, then eyes, then forehead. Focus on the sensations of the muscles when they are no longer tensed. When you are familiar with this exercise, you will begin to recognize when your muscles are abnormally tensed, even if you don't feel "stressed." For example, you may notice jaw and neck tension when sitting in traffic or waiting in a line at the store. Once you feel this tension, work to release it as you do during your quiet training sessions.
- Cue-controlled relaxation uses a combination of deep breathing and repetition of the word "relax." Begin this exercise with a slow, deep, abdominal breath. Place your hand over your abdomen to ensure that it is moving in and out with each breath. After inhaling, hold for 5-10 seconds, the exhale, slowing repeating the word "relax." Repeat. After you are comfortable with this technique, you should be able to close your eyes and take a deep breath as above before confronting stressful situations, like a doctor's visit, meeting with the boss, or discussion with your spouse. This will relax your system to reduce the impact of the stressful situations on your pain-provoking physiology and headaches.

#### Thermal biofeedback

- Place a handheld thermometer on your finger and measure the temperature. Concentrate on raising your finger temperature by 2-3 degrees Fahrenheit (probably to about 96 degrees) while practicing relaxation techniques. Some people find that it's difficult to "feel" relaxed and using biofeedback as part of their relaxation training to provide an external monitor. If you are activating and inhibiting the right nervous system pathways, this will result in a feeling of calm, higher skin temperatures, and, most importantly, blocking of pain messages.
- An inexpensive finger thermometer and biofeedback audiotape may be obtained from Primary Care Network (1-800-769-7565).

#### Stress management

- Stress is consistently reported as the #1 trigger for both migraine and tension-type headache, acting as a trigger for about 75% of headache sufferers. Remember that everyone experiences stress symptoms, with our bodies reacting in different ways to stress. Some people become loud and boisterous, others quiet and reserved. Other people experience chest pain, rapid breathing, stomach aches, or diarrhea. Typically, people notice that stress causes their usual health symptoms to be aggravated. Stress can cause people with heart disease to experience chest pain, people with Parkinson's disease more tremors, people with epilepsy a higher risk of seizures, and headache sufferers headaches.
- Stress management does not mean ignoring or eliminating stressful situations from our lives. Indeed, every life is full of stresses related to school, work, family, health issues, etc. In fact, driving to your doctor's office may be stressful because of traffic and concerns about making an appointment. Your doctor would not suggest that you "eliminate" the stress of your appointment. Instead, you need to teach your body to react to stresses in different ways that do not result in release of pain-provoking chemicals and tightening muscles. So, when you're stuck in aggravating city traffic on your way to the appointment, instead of experiencing a flare in temper, clenching your teeth, and tightening the muscles in your neck, you can repeat soothing thoughts ("I will make my appointment. I am a responsible person.") or listen to music, while practicing relaxation techniques (such as slow, deep breathing). These same strategies can be used before attending a meeting with one's boss or a child's teacher, before beginning a discussion about family issues with spouse or child, or when waiting in a long line at the grocery store.
- Most people experience stress symptoms when exposed to new environments and situations. Take time to identify situations that are typically stress-provoking for you. When you feel your jaw or hands clench or notice you are beginning to sweat before certain circumstances, make a mental note that these events are stressful for you. For some people, events like taking an examination in school or giving a speech or a business presentation may be where they experience stress. For others, seemingly minor events, like making a phone call, driving in traffic, or meeting a school teacher may be stress-provoking. Understanding your body's reaction to frequent situations allows planning for use of relaxation techniques and stress management immediately before each event.

#### Physical exercises

- Helpful exercises for headache typically include both aerobic and stretching exercises.
- In general, low-impact physical activity and exercise should be maintained during uncomplicated pregnancies. Aerobic exercises are typically performed daily, beginning at a low level, then increased as tolerated. Walking, swimming, and bicycling are all good aerobic exercises. A walking program often begins at about 1/8 to 1/4 mile per day, increased by 1/8 to 1/4 mile each week until achieving a target of 1-2 miles per day. You

should always discuss plans for any exercise program with your obstetrician. In general, low-impact activities performed routinely before pregnancy can be continued.

- Stretching exercises should be relaxing. They should be done daily, with each session lasting about 25 minutes. Stretches should result in a normal sensation of stretching, but not pain. Hold the stretch for 5 seconds, relax for 5-10 seconds, and then repeat each stretch about 3-5 times. Many stretching exercises can be performed while standing or sitting and can act as stress-releasers when sitting in a long meeting or the car, waiting in line at the store, or standing in the shower. Many people include stretching exercises with their favorite daily television program to increase the likelihood that they will maintain these exercises as part of their daily routine; others use them before bed to aid sleep.
  - Neck range of motion: bend your chin to your chest, then rotate chin to each shoulder, then tip your ear toward your shoulder, then pull in your chin to make a double chin.
  - Shoulder shrugs: sit/stand up straight and raise your shoulders straight up. Lower and relax. Then raise shoulders up and forward. Lower and relax. Then raise shoulders up and back.
  - Suboccipital range of motion: place a rolled or folded towel behind you neck and gently pull down. Tilt your chin to your chest. Look up at the ceiling. Tilt your ear toward the shoulder.
  - Neck stretches: tilt your ear to the shoulder on the same side. Then tilt your chin forward and toward the opposite breast. Gently press with your hand at the end of the stretch to feel the stretch.
  - Neck isometrics: place your palm on your forehead and press your head against it, keeping you palm stationary. Don't let the head or hand move. Repeat with your hand on each side of the head.
  - Head lift: place folded hands behind the neck at the base of your head. Pull elbows forward and up to achieve the sensation of lifting the head up slightly from the neck.
  - Turtle: with head looking forward, push the chin forward, away from the neck. When the head is forward, turn about 1 inch to each side and up.
- Flare techniques can be used when a headache has already occurred, to help minimize pain. These may be used in conjunction with applying heat or ice (whichever you find more soothing) for 20 minutes to the neck and shoulders.
  - Oscillatory movements: small, rhythmic, side-to-side head movements turn the head through about 25% of its full range of motion. Starting with your head facing forward, first turn your head away from the painful side and back. Repeat at a rate of about 1 per second, for a total of 30 seconds. Rest for 30 seconds; then repeat until no further relief is noted. Then switch to turning the head toward the painful side, and proceed as above.

- Positional distraction: Place books on the floor in a stack that is about 1-2 inches high. Lay down on the floor, with the back of your head resting on the books. The edge of the books should be near the middle of your head, so that your neck is free. Relax so that your head moves up from your neck.
- Trigger-point compression: during a headache, you may notice certain spots on your muscles that aggravate the head pain when you press them. These are called trigger points. If you identify trigger points, apply pressure to them with your fingers and hold for 12-60 seconds. Release the pressure, and proceed with your usual stretching exercises.

Figure. Balance between headache-relieving and headache-aggravating variables during pregnancy

