

Name of disorder

Chronic tension-type headache

Essay title

The biology of chronic tension-type headache: what's new?

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Content**Tension-type headache**

Most people experience headache at some stage in their lives. When the main symptom is dull, aching and non-pulsating pain, usually on both sides of the head, and the cause is not vascular, migrainous or related to a specific disease, the term tension-type headache is used. This makes tension-type the most common form of headache¹. In fact, tension-type headache accounts for almost 90 % of all headaches².

For the majority of people, tension-type headache is occasional and easily treated with over-the-counter-medication, relaxation techniques or manual therapies such as acupuncture and massage. However, about 5 % of people experience headache that is present almost every day of their lives (known as chronic tension-type headache)². On-going headaches can lead to significant disability, interfering with normal work and recreation activities³.

Typical symptoms of chronic tension-type headache

- Present for 15 or more days each month, for at least 3 months
- Dull, aching, non-pulsating pain
- Pain is mild to moderate (not usually severe)
- Pain is present on both sides of the head
- Unlikely to be accompanied by sensitivity to noise, light or visual disturbances
- Unlikely to be accompanied by nausea
- Not aggravated by physical activity

Possible triggers

- Stress, anxiety or depression
- Poor posture
- Lack of sleep
- Medication overuse
- Eye strain
- Fatigue

Understanding the biology of chronic tension-type headache: what's new?

Why some people develop persistent, everyday headache while others experience only occasional symptoms has been the subject of considerable research in recent years. Chronic tension type headache was once thought to be caused by muscle contraction. However, new models suggest persistent headache may be due to changes occurring not only in muscle but also in the spinal cord and the brain.

Muscle tenderness

A key finding in individuals with tension-type headache is tenderness in the muscles and nerves of the shoulder, neck and scalp⁴. The amount of tenderness has been linked to the severity and frequency of headache^{5, 6}. Although we are not yet certain that muscle tenderness itself leads to headache, studies have shown that tenderness usually precedes headache and is also present on days without headache⁵. These findings suggest that muscle tenderness may be an important factor in the development of tension-type headache.

How might muscle tenderness lead to chronic tension-type headache? The most accepted theory is that on-going muscle tenderness leads to a continuous barrage of pain signals entering the spinal cord and brain^{4, 7}. This barrage of pain information causes nerves in the spinal cord and brain to become sensitised, a phenomenon known as central sensitisation.

Central sensitisation of the spinal cord and brain

Central sensitisation is the term used to describe an increased sensitivity of nerves in the brain and spinal cord to pain and other sensations. The result of this sensitisation is that:

- 1) A person's perception of pain is increased not only around the head but also in body regions that do not display any symptoms (i.e. regions outside the head and neck)
- 2) Sensations that are not normally painful, such as pressure or mild hot/cold, become painful.

Sensitisation of the spinal cord and brain appears to be present in individuals with chronic tension-type headache but not in those who experience occasional symptoms⁸⁻¹¹.

Faulty pain control systems

Further investigation of spinal cord and brain involvement in chronic tension-type headache has shown that activity in pathways normally used to control pain is reduced. Usually, when a person is exposed to multiple types of pain in different body locations at once, they experience less pain in one of these locations^{20, 21}. This can be thought of as 'pain stops pain' and this piece of biology is believed to prevent pain from spreading and becoming unmanageable¹². These pain control systems appear to be faulty in chronic tension-type headache^{13, 14}.

Stress, anxiety and depression

Emotional factors such as stress, anxiety and depression also appear to contribute to the development of chronic tension-type headache^{15, 16}. It has been suggested that emotional factors may contribute to, and/or maintain the central sensitisation process. More research is needed to clarify this link.

Summary and the future

Although further research is needed to determine the exact biology that leads to chronic tension-type headache, it is clear that the spinal cord and brain are involved. A range of factors including muscle tenderness, sensitisation of nerves in the brain and spinal cord, faulty pain control systems and emotional factors may all contribute to chronic tension-type headache. As our understanding of the

biology of this disabling condition continues to grow, it will be possible to develop and test new treatments that target not only muscle factors, but also changes occurring in the spinal cord and brain. In the future, this may lead to better treatments that reduce the severity and frequency of headaches and improve the quality of life for sufferers.

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