Migraine – how does it develop? [1] (1)

**Increased activity of neurons**
- Increased release of inflammatory mediators
- Inflammation

**Vessel walls swell due to inflammation**
- Decrease in regional blood flow in the brain
- Perception disturbances (aura)

**Severe pain**
- Severe inflammation of the vessel wall + disturbance of the body’s own pain inhibition
- Each pulsation = severe pain

**Perception disturbances improve**
- Vessel wall is damaged
- Vessel dilates
- Aura abates

(1) modified from www.apotheken-umschau.de/Migraene. Accessed February 2013
The development of migraine is a complex process, the mechanisms of which have only partly been clarified. The sequences described here represent the current state of knowledge in a modelled and simplified manner.

**A Inflammation**

Triggering factors lead to increased activity of the neurons in the brain. Secretion of neurotransmitters and inflammatory mediators gives rise to inflammation of the blood vessels.

**B Aura**

As a result of this inflammation, blood flow in the brain temporarily decreases. The reduced blood flow appears to be a cause of perception disturbances that precede the pain.

The reduced blood flow “migrates” at a rate of 3-4 mm/min from the posterior to the anterior regions of the brain – parallel with the spread of the aura in the field of vision.

**C Perception disturbances improve**

As a result of damage to the vessel wall and vessel-dilating nerve impulses, the normal cerebral blood flow is restored, so that the aura abates.

**D Intense pain**

Two mechanisms are responsible for the intense pain. Firstly, pain sensors are sensitised by the inflammation of the vessels. Secondly, the body’s own pain-inhibiting system is disturbed in migraine.

These mechanisms together lead to every pulsation being perceived as intense pain.