Effect of propranolol in a non-invasive human model of trigeminovascular activation

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Propanolol is a β-receptor agonist that is used for the prophylactic treatment of migraine since many years. However, the mechanism of action of propranolol in preventing migraine attacks has not yet been elucidated. Both a central action, as well as a vascular action (preventing beta receptor-mediated vasodilatation) have been suggested. In our study, we set out to assess whether propranolol has an inhibitory effect on the trigeminovascular system. We used the human forehead perfusion model for our studies.

Shortly, 22 healthy subjects (26±8 years old, 11 females) were included in our crossover study. Subjects visited our center twice and received either placebo (grapefruit juice) or 80 mg propranolol (oral solution with tangerine taste, diluted in grapefruit juice). During each visit, human forehead blood flow responses to topical application with capsaicin (0.6 mg/ml) were studied before and 80 minutes after administration of either propranolol or placebo. The second visit, the subjects who received placebo during the first visit received propranolol and vice versa. In addition to the skin dermal blood flow, blood pressure and heart rate were recorded. Studies were performed in a double-blind manner, with the investigator performing the blood flow studies also being blinded for the blood pressure and heart rate values.

During the presentation, data on the inhibition of trigeminovascular activation by propranolol will be discussed.