

Dentistry

Overview

Background

In 1998, 87% of people living in the UK had some natural teeth, while 13% had lost all their natural teeth (Kelly 1998). Those with teeth had an average of 1.5 decayed or unsound teeth. Indeed, over half (55%) had at least one such tooth, and every year nearly half the population experiences some form of dental pain or discomfort, with 25% seeking dental treatment as a result. In a UK survey of adults' feelings about going to the dentist, around 64% identified with being nervous of some kinds of dental treatment.

There are various levels of toothache ranging from occasional discomfort caused by early tooth decay, or periodontal (gum) disease, to the more severe, constant pain caused by advanced tooth decay and dental abscesses. Pain is defined as 'an unpleasant sensory and emotional experience.' Pain is also a subjective experience. Acute pain is associated with a brief period of tissue injury (a cut) or inflammation. During a dental procedure, the pain experienced can be due to tissue and nerve damage, but it may also be caused or increased by anxiety.

Effective management of pain from medical or dental procedures involves a combination of pharmacological (e.g. local or general anaesthetics, nerve blocks, sedatives, analgesics), psychological (e.g. hypnosis, relaxation techniques), cognitive-behavioural therapy, and physical treatments (massage, hot and cold packs).

Clinical evidence

(Bensoussan 1999, Rosted 1998, Ernst 1998). Controlled trials have shown that ear acupuncture is as effective as intranasal midazolam in reducing dental anxiety (Karst 2007), and that acupuncture is more effective than placebo in the prevention of post-operative dental pain (Lao 1999) and in reducing the gagging reflex (Sari 2010). Evidence from case series suggests that acupuncture can reduce dental anxiety (Rosted 2010) and the gagging reflex (Rosted 2006), and that electroacupuncture can control post-operative pain after wisdom tooth extraction (Tarares 2007). One controlled study found no effect on the pain threshold of dental pulp (Goddard 2009). The systematic reviews are now more than 10 years old and up-to-date ones are called for to better evaluate the evidence.

Potential mechanisms

In general, acupuncture is believed to stimulate the nervous system and cause the release of neurochemical messenger molecules. The resulting biochemical changes influence the body's homeostatic mechanisms, thus promoting physical and emotional well-being. Stimulation of certain acupuncture points has been shown to affect areas of the brain that are known to reduce sensitivity to pain and stress, as well as promoting relaxation and deactivating the 'analytical' brain, which is responsible for anxiety (Wu 1999).

Acupuncture may help relieve dental pain by:

- Stimulating nerves located in muscles and other tissues, which leads to release of endorphins and other neurohumoral factors (e.g. neuropeptide Y, serotonin), and changes the processing of pain in the brain and spinal cord (Pomeranz 1987, Han 2004, Zhao 2008, Zhou 2008, Lee 2009, Cheng 2009);
- reducing the cardiovascular reflex elicited by toothache, which is associated with the adrenergic system (Jung 2006);
- increasing the release of adenosine, which has antinociceptive properties (Goldman 2010);
- modulating the limbic-paralimbic-neocortical network (Hui 2009);
- reducing inflammation, by promoting release of vascular and immunomodulatory factors (Kavoussi 2007, Zijlstra 2003);
- increasing local microcirculation (Komori 2009), which aids dispersal of swelling.

References

Kelly M et al. Adult dental health survey. Oral health in the United Kingdom. Office for National Statistics 1998 [online]. Available:
http://www.statistics.gov.uk/downloads/theme_health/AdltDentIHlth98_v3.pdf