Acupuncture: Probing its way into dentistry—Part II

Dental applications of acupuncture in managing xerostomia, dental anxiety and gag reflex

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After a general introduction to acupuncture and its practical applications in contemporary dental practice, this second part of the article will discuss the use of the method in managing oral conditions such as xerostomia and its effect in reducing dental phobia and the gag reflex before illustrating the recent uptake of acupuncture in the mainstream health care sector in Singapore.

Management of xerostomia

Xerostomia may be medication-induced and other common causes are autoimmune conditions like Sjögren’s syndrome and irradiation of the head or neck region. Conventional management of xerostomia includes palliative treatment, such as a saliva substitute or chewing gum, and systemic medication, like pilocarpine.

The use of acupuncture as an alternative treatment modality for xerostomia has been documented in Western medicine since the 1980s. Observational studies have demonstrated that acupuncture treatment may increase salivary flow in healthy volunteers, patients with Sjögren’s syndrome and patients who have undergone radiotherapy of the head or neck region.

In a long-term retrospective study involving 70 patients with xerostomia due to primary and secondary Sjögren’s syndrome, irradiation and other causes, the patients received a course of 24 acupuncture treatment sessions over the first six months. The salivary flow rate (SFR) for stimulated and unstimulated saliva was measured six months after the baseline acupuncture treatment and according to subjective changes observed by the patients. Data for up to three years was also analysed, comparing those who chose to receive additional acupuncture treatment with those who did not. The results showed that the SFR in both stimulated and unstimulated saliva was significantly higher after six months compared with the baseline and this was consistent with the subjective improvement described by the patients. In addition, patients who received additional acupuncture treatment after six months had a consistently higher median SFR in both stimulated and unstimulated saliva compared with those who did not, suggesting that supportive acupuncture treatment given over a long period may help to maintain its therapeutic effect. This finding is in accordance with the traditional Chinese medicine (TCM) concept that the treatment effect of acupuncture may be accumulative after repeated sessions.

Acupuncture treatment may provide relief for pilocarpine-resistant xerostomia patients after radiotherapy for head or neck malignancies. However, the treatment outcome for the study cited was only based on the Xerostomia Inventory score, which is a self-report questionnaire. Acupuncture seems to be able to increase the SFR, provided that the salivary glands are still functional. For those patients whose salivary glands have been structurally affected by radiotherapy and become resistant even to pilocarpine, acupuncture may provide subjective relief to a limited extent, although the patients should be advised on realistic expectations of acupuncture therapy. The mechanism behind how acupuncture can increase the SFR is still not fully understood. It can be a placebo effect as shown in Pavlovian conditioning, in which expectation alone of those receiving treatment can induce saliva production. Local acupoints in the head and neck region may also directly stimulate the nerves innervating the salivary glands. Some authors have suggested that acupuncture treatment triggers the release of neuropeptides and this can affect blood flow, have anti-inflammatory properties and exert a trophic effect on the salivary glands. Another possibility may be related to neuronal activation. In a descriptive study, cortical regions were evaluated using functional magnetic resonance imaging of volunteers undergoing acupuncture treatment. It was observed that acupuncture treatment activated the parietal, Rolandic and frontal opercula, as well as the insula, overlapping with the regions involved in gestation and salivation. The authors proposed that acupuncture treatment may tap into the neuronal circuit that activates the salivary macules in thepons and subsequently the salivary glands via the cranial nerves. More studies are needed to investigate how acupuncture therapy may increase salivary flow.

Management of dental anxiety and gag reflex

A recent Cochrane review showed that 31 per cent of adults are fearful of dental treatment. A phobic patient may develop reluctance towards or avoidance of dental treatment and thus not seek dental care. During dental treatment and this was consistent with subjective changes observed by the patients. Data for up to three years was also analysed, comparing those who chose to receive additional acupuncture treatment with those who did not. The results showed that the SFR in both stimulated and unstimulated saliva was significantly higher after six months compared with the baseline and this was consistent with the subjective improvement described by the patients. In addition, patients who received additional acupuncture treatment after six months had a consistently higher median SFR in both stimulated and unstimulated saliva compared with those who did not, suggesting that supportive acupuncture treatment given over a long period may help to maintain its therapeutic effect. This finding is in accordance with the traditional Chinese medicine (TCM) concept that the treatment effect of acupuncture may be accumulative after repeated sessions.

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Traditionally, medications like benzodiazepines and midazolam have been used to manage dental anxiety. The use of acupuncture may provide an alternative treatment modality without possible adverse drug reactions. Several reports on the use of auricular acupuncture for treating chronic and acute anxiety have shown promising results. A randomised controlled trial comparing auricular acupuncture with intranasal midazolam for managing dental anxiety suggested that both treatment methods were similarly effective. More large-scale studies are needed to verify this finding.

The gag reflex is a normal protective, physiological mechanism that occurs to prevent foreign objects or noxious material from entering the pharynx, larynx or trachea. Its causes may be somatic, that is brought about by stimulating certain trigger areas in the oral cavity, or psychogenic, that is inducted by thought stimulus modulated by the higher brain centres. A hyperactive gag reflex can be a hindrance to dental procedures, such as during taking of alginate impressions for denture fabrication. The use of certain acupoints like PC6 (neiguan) and CV24 (chengjiang) have been reported to reduce the gag reflex significantly.7 Auricular acupuncture too has been suggested for treating a severe gag reflex.8 According to the TCM theory, the acupoint PC6 (neiguan), located on the palmar side of the forearm 2 in. (50.8 mm) above the transverse crease of the wrist, falls on the pericardium meridian, which has the effect of “calming the heart which houses the spirit.” It is often used to treat heart palpitation, nausea and vomiting. In providing an explanation in the context of Western medicine, it has been proposed that acupuncture may trigger an increase in circulating endorphin, which binds to the opioid receptor, exerting an antiemetic effect.9 The anti-gagging point located on the ear corresponds with the area of the skin innervated by the auricular branch of the vagus nerve and adjacent to the area innervated by the auriculotemporal branch of the mandibular division of the trigeminal nerve, both are responsible for the sensory and motor function of the larynx, pharynx and palatal region. It can be postulated that stimulation of the auricular acupoint may inhibit the muscular function in the gag reflex. More studies to verify the effectiveness of acupuncture in controlling the gag reflex should be carried out.

Growing interest among medical and dental professionals

A recent press report in Singapore indicated that there are an increasing number of medical and dental professionals also trained in providing acupuncture treatment.10 Based on the official figure at the end of 2015, there were 249 registered acupuncturists in Singapore, of which 134 were medical doctors and dentists, constituting 54 per cent of the group. In addition, acupuncture treatment for pain management is currently being offered in four major public hospitals in the country, a major step towards its recognition as a treatment modality in the mainstream health care sector.

Conclusion

The use of acupuncture has a long history and has been proven to be an effective treatment modality in TCM. The scientific evidence for its role in pain management is strong, although more large-scale studies with better experimental designs should be carried out to verify its application in other areas. The use of acupuncture in dentistry may provide an added dimension to the patient-oriented holistic treatment approach that all health care providers should strive to achieve.