Acupuncture for Xerostomia

Xerostomia

- Greek origin
  - Xeros-dry, Stoma-mouth
- Subjective complaint of “dry mouth”
  - May not be associated with a lack of saliva
  - Stimulated >1.0 ml/min considered normal

- Subjective symptom
  - No minimum salivary flow
  - “Oral dryness” not reliable indicators of flow rate
  - Impaired function
    - With or without the sensation of oral dryness

- Salivary glands particularly sensitive
  - Atrophy and fibrosis
    - >50 grays/5000 CGy
    - Damage may be irreversible
    - Possible rebound minor salivary glands
  - Saliva reduced in days
    - 80% reduction in 6 weeks

- Radiation Effects
  - Decreased salivary pH
    - >4000 CGy resting salivary pH = 5.0 – 5.5
    - Critical pH for decalcification 5.5
  - Increased viscosity
  - Reduced salivary constituents
    - Immunoglobulin's
    - Buffers
    - Small organic molecules

- Taste
- Loss of appetite
- Chewing
- Swallowing
- Speaking
- Sleeping
- Caries

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**Intensity-modulated radiation therapy (IMRT)**
- Potential to reduce salivary radiation dose
  - Tumoricidal dose
  - Minimize dose to surrounding structures
- Problems
  - Partly spares the parotid glands
  - Potentially increased risk of a marginal miss
  - Unable to apply universally at this time
  - Increased planning time
  - More expensive

**Traditional**
- Limited benefit
  - Water
  - Saliva substitutes
  - Chewing gum
  - Sialogogues...pilocarpine
  - Surgical transposition of submandibular gland
  - Hyperbaric oxygen therapy

**Pilocarpine side effects**
- Sweating
- Rhinitis
- Headache
- Nausea
- Urinary frequency

**Amifostine**
- Reduce the severity radiation-induced xerostomia
- Requires parenteral admin each XRT session
- Limited availability
- Multiple side effects
  - Nausea and vomiting
  - Flushing or feeling warmth
  - Chills or feeling coldness
  - Tiredness
  - Fever
  - Drowsiness
  - Sneezing and hiccups

**Non-Traditional**
- Electrical stimulation of tongue and palate
- Electro stimulation without needles
  - Like TENS
- Acupuncture

**ACUPUNCTURE VIDEO**
- 30 minutes
Acupuncture for Xerostomia

Acupuncture Overview
- Bodily functions regulated by Qi “chi”
  - Life Force constantly circulating through channels
  - Disruptions of flow responsible for disease
  - Acupuncture "family of procedures"
    - Correct imbalances in the flow of Qi
  - Stimulation of anatomical points
    - Penetration of skin
    - Thin metal needles
    - Can be manipulated manually/electrical

History
- Originated in China
  - Sharpened stones/bones date from 6000 BC
    - Interpreted as acupuncture instruments

1443 AD
- Reproduction bronze figure showing acupuncture points cast in ad 1443

Some of the oldest needles found date to A.D. 600.
- Bronzes, copper, tin, gold, and silver

Spread and modified
- Korea, Japan, Vietnam, Europe, America
- Different styles developed

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Jan 23, 2013 Penélope Cruz photo on red carpet, she was wearing TMS acupuncture pins

Types

- Traditional Chinese Acupuncture (TCM)
  - Most common studied and practiced in US
  - Effect flow of Qi

- Five-Element Acupuncture
  - Fire, earth, metal, water and wood
  - Holistic approach to medicine
  - Balance five elements
  - Restoring balance will allow healing

- Japanese Style Acupuncture
  - More subtle route than TCM
  - Fewer and thinner needles
  - Less stimulation

- Korean Hand and Scalp Acupuncture
  - Points in hand/scalp
  - Correspond to areas of the body

- Auricular Acupuncture
  - Musculoskeletal Mapping
  - Points in ear correspond to areas of body

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Types
- Auricular Acupuncture
  - Somatopic/Morphologic Mapping

Acupuncture Literature
- Few standardized protocols
  - Prevents validation
  - Variation between providers

How it works
- Blood increased in skin overlying the parotids
  - (J Oral Rehabil. 1993;20:541-548)
- Increased saliva concentrations
  - Vasoactive intestinal polypeptide
  - Calcitonin gene-related peptide
  - (Neuropeptides. 1998;32:543-548)
  - (Neuropeptides. 1999;33:244-250)
- Large Intestine 2 (LI2)
  - Bilateral brain activation
    - Gustatory and olfactory centers
  - Not activated during “sham acupuncture”
    - (BMC Complement Altern Med. 2008;8:37)

How it works
- Placebo-controlled studies remain controversial
- Require “Sham Acupuncture”
  - Possible unknown effects
  - Undistinguishable from real acupuncture

Large Intestine 2
- Presume palpebrae bil. 
- Meta-carpal bil.
- LI2.

Problems with Acupuncture Trials
**Protocol**

- Combination Meridian and Auriculotherapy
  - Developed by Dr. Richard Niemtzow and colleagues

**Benefits of Protocol**

- All sites easily accessed
  - No disrobing required
  - Tx easily accomplished
  - Dental chair, exam table or even standard chair
- Ear points well accepted by patients
- Good landmarks for placement
- VERY SIMPLE
  - My favorite reason

**Supplies**

**Needles**

**Shen Men, Point Zero**

Salivary prime
**Title:** A Phase III Prospective Randomized Trial of Acupuncture for Treatment of Radiation-Induced Xerostomia in Patients with Head and Neck Cancer

**Goal:** To learn if acupuncture can improve symptoms of moderate or severe dry mouth caused by radiation therapy received for head and neck cancer

**Primary Objective**
1. Determine whether or not acupuncture can symptomatically improve moderate or severe xerostomia (grade 2 or 3) due to head/neck radiotherapy.

**Secondary Objectives**
1. Examine the duration of response (up to a maximum of 6 months) in the subgroup of patients who report a response to the acupuncture intervention.
2. Examine group differences in saliva flow using unstimulated and stimulated whole salivary flow rates.
3. Examine whether true acupuncture results in better overall QOS than sham acupuncture or standard of care.
4. Determine the effects of acupuncture on saliva-based factors including pH, buffering capacity, and viscosity as well as levels of total protein, calcitonin-gene related peptide, and vasoactive intestinal polypeptide.
5. Examine the role of expectancy for the benefits of acupuncture in predicting outcomes.

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**Title:** Controlled Trial Of Acupuncture To Prevent Radiation-Induced Xerostomia

**Goal:** Clinical research study is to learn if acupuncture can help to prevent xerostomia (dry mouth) and improve the quality of life in patients who receive radiation treatment to the head and neck. This study will determine if one acupuncture treatment approach is more effective than another. Dry mouth is a common problem among cancer patients who have received radiation treatment to the head and neck.

**PRIMARY AIM**
1. Determine if true acupuncture is more effective than sham acupuncture or standard care for preventing the severity of radiation-induced xerostomia among cancer patients at M. D. Anderson and Fudan Cancer Hospital. The primary outcome will be self-reported xerostomia symptoms using the Xerostomia Questionnaire (XQ).

**SECONDARY AIMS**
1. Examine group differences in saliva flow using unstimulated and stimulated whole salivary flow rates. This will provide a more objective measure of salivary function.
2. Determine if true acupuncture is more effective than sham acupuncture or standard care for reducing the incidence of radiation-induced xerostomia.
3. Examine whether true acupuncture results in better overall quality of life than sham acupuncture or standard of care.
4. Determine the effects of acupuncture on saliva-based factors including pH, buffering capacity, and viscosity as well as levels of total protein, calcitonin-gene related peptide (CGRP), and vasoactive intestinal polypeptide (VIP).
5. Examine the role of expectancy for the benefits of acupuncture in predicting outcomes. The role of expectancy as a moderator of the effects of treatment will be thoroughly examined.
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Questions

Acupuncture in xerostomia—a systematic review.


The aim of this systematic review was to assess the efficacy of acupuncture in the management of xerostomia. Assessing quality of studies aims to efficiently integrate valid information and provide a basis for sound decision making based on the best available evidence. Articles of controlled trials evaluating the efficacy of acupuncture in the management of xerostomia were obtained by searching through the databases MEDLINE and Cochrane Central Register of Controlled Trials to September 2003. Three criteria were used to assess the quality of these studies. The studies were considered to be of high quality if low quality in accordance with the criteria list utilized. The results of the trials were considered positive, negative or indifferent based on statistically significant between group differences. The results of the trials were considered to be of high quality and it presents indifferent results. One of the two studies of high quality presents positive results and one presents indifferent results. An analysis of the results degree of evidence revealed no evidence for the efficacy of acupuncture in the management of xerostomia. This systematic review shows that there is no evidence for the efficacy of acupuncture in the management of xerostomia. There is a need for future high quality randomized controlled trials.

Literature 1996-2012