

The History of Liquid Ear Acupuncture and the Current Scientific State of the Art

Daniela Litscher^{1,2*}, Gerhard Litscher^{1,2}

¹Research Unit for Complementary and Integrative Laser Medicine, Medical University of Graz, Austria

²Research Unit of Biomedical Engineering in Anesthesia and Intensive Care Medicine, and TCM Research Center Graz, Medical University of Graz, Austria

Key Words

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Abstract

This short review article presents a current overview of existing publications and scientific results regarding liquid (ear) acupuncture. The injection of liquids into defined acupuncture points of the ear is not a method commonly used in the Western world. The term liquid acupuncture has different definitions, which makes understanding each definition and differentiating one from the other difficult. General terms like pharmacopuncture, homeosiniatry, and liquid acupuncture, which all describe the method of injecting different kinds of drugs into a defined body acupuncture point, are used. This article presents the history of liquid acupuncture, as well as the current scientific state of the art, from the point of view of two European researchers. Some articles are discussed and a few practical examples are presented.

1. Introduction

The term liquid acupuncture describes the injection of liquids into defined acupuncture points on the ear. This method is not very popular in the Western world, and most people in Europe, for example, do not know this specific term. An interesting article from the year 2014

describes this new method (for the Western world, at least) very well. Ramme wrote about the history and current fields of application of the so-called liquid acupuncture [1]. The author reported that liquid acupuncture could be very rapidly effective in treating patients with chronic and acute pain and that this new method was simple to perform and could be applied safely and successfully by a therapist after a short period of training.

Actually, methods that apply stimuli to the ear are based on 2000 years of experience. Even in ancient Egypt, women who did not want to become pregnant had their ears pricked. Reports prove that in the 17th and the 18th centuries, healers in Persia and Japan cauterized a human's concha to relieve the patient's pain. In his textbook "Auriculotherapy" from 1972 [2], the French physician Paul Nogier published numerous case reports about ischialgia from the "Journal of Connaissances Médico-Chirurgicales 1850-1855", which describe patients successfully treated by cauterization of the concha. Nogier recognized the importance of these case reports. Judging from the localization of cauterization, which was successful in cases of low back pain, he developed the idea of an inverted embryo represented on the external ear, including the possible location of the chest and neck, the internal organs, the extremities and the head. In the following period, those locations were systematically checked in animal experiments and in clinical applications. In accordance with these results, a complete map of the body image on the ear was developed and confirmed in the following years (see Fig. 1) [1].

Functional magnetic resonance imaging (fMRI) can represent areas of the brain that respond to stimulation of the ear and/or the corresponding body area.

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*Corresponding Author

Daniela Litscher, Research Unit for Complementary and Integrative Laser Medicine, Medical University of Graz, Auenbruggerplatz 29, 8036 Graz, Austria.
Tel: +43-316-385-13907 Fax: +43-316-385-13908
Email: daniela.litscher@medunigraz.at

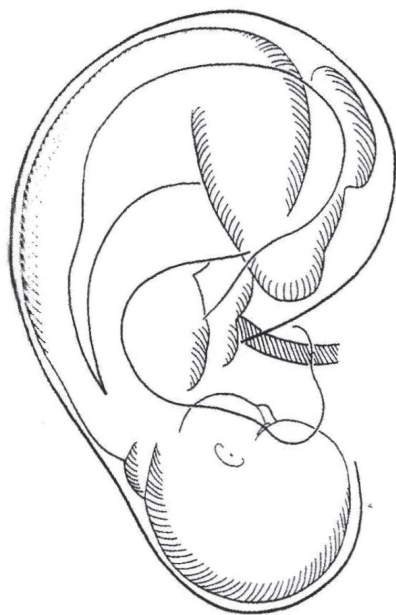


Figure 1 Inverted fetus [3].



Figure 2 Location of different ear acupuncture points in traditional Chinese medicine.

Nowadays, this method provides a clear view of the centuries-old experience of the relationship between the ear and the body. In the second half of the 20th century, ear acupuncture (EA) developed continuously, and in 2014, several cases of patients treated with liquid acupuncture and its effectiveness in each case were systematically observed and reported [1]. With the use of a thin injection needle, a small liquid depot can be placed (almost pain free) under the skin of the ear. This liquid depot is called wheal. The patient sits up straight and needs only a short “recovery” period of a few minutes before leaving the clinic. The local swelling recedes after some minutes. Redness and a heat response, which is described as pleasant, will occur. In most patients, pain relief occurs after two to twelve hours. This effect can increase until the third day, and in some cases, subsequent treatments are needed [1].

Liquid acupuncture can be performed with homeopathic substances. This is called “homeosiniatry”. The treatment is similar to an acupuncture treatment, but instead of a needle, a cannula with homeopathic medicine is injected. After the injection of the homeopathic remedy, a skin wheal appears. Within 48 hours, a positive impulse should occur. According to the authors of a website [4], many kinds of diseases can be treated with this method. Another article entitled “The usefulness of liquid acupuncture” describes the widespread indications, for example, heart diseases, depression, insomnia, anxiety, hypertension, nervous and stress overload, and many more, for the use of liquid acupuncture [5].

2. Scientific Research on Liquid Ear Acupuncture

Currently, only a few papers on the topic liquid acupuncture at the ear are available in scientific databases. One of the first articles on this topic was published in 1977 by Lee *et al* [6]. First of all, the authors combined knowledge in modern medicine and traditional Chinese medicine to select auricular points for the treatment of insomnia. Instead of the placement of conventional acupuncture needles, they injected small amounts of lidocaine into those sites. All patients (except one with moderate relief) obtained substantial relief. The authors reported that the therapeutic effect lasted for up to three months after the end of the treatment series [6]. Also, in the 1970s, Grobglas and Lévy [7] conducted a trial on asthmatic patients, injecting a solution of 1 – 3 mL of 1% procaine daily into the Chinese “asthma” point (ping chuan). In 18 of the 25 patients, a significant improvement was obtained after 7 – 8 days of treatment [7].

Other Western researchers also started practicing neural therapy on auricular points: Fleck who for the first time described Huneke’s “seconds phenomenon”, i.e. the instantaneous disappearance of pain after treating the auricle [8]; Lange who obtained very good results for phantom pain by placing liquid depots (procaine or lidocaine) subcutaneously on the auricular representation of the amputated limb. A further result with the application of neural therapy cited by Lange was that of quicker reabsorption of hematomas following trauma [9]. Another French author who should be cited here is Gérard Landel [10]. He performed lidocaine 2% injections in the patients with lumbar-sciatic

and cervical-brachial pain, irritable bowel syndrome, and migraine/tension-type headaches. Particularly, in patients with cervical and lumbar pain, Landel experimented with a two-phase treatment: a subcutaneous wheal in the first phase and an intracartilaginous transfixion in the second phase. He observed no side effects such as local infections, only small hematomas [10].

In the year 1993, the Chinese author Chen wrote an overview article about auricular acupuncture (Fig. 2) and its mechanism in general. The article was based on a review of more than 80 references. A variety of stimulation methods, such as auricular acupuncture with filiform needles, needle embedding therapy, bloodletting, laser irradiation, auricular plaster, pressing therapy, etc., were discussed in that review article. The injection of a liquid into an EA point is also mentioned in this publication from the early 90s [11]. In order to give the reader an idea of the great variety of substances used for auricular point injection and the diseases to be treated, we have listed four randomly chosen examples (taken from Ref. [11]) in Table 1.

Here, a study from 2013 should be mentioned. It deals with the topic of pharmacopuncture in general, which means the injections of special drugs into defined acupuncture points [12, 13]. A very interesting article about this topic was published in 2014 by Italian researchers [14]. The aim of that study was to verify the hypothesis of EA point specificity by using fMRI and stimulating two auricular points having different topographical locations and clinical significances. Two fMRI sessions were carried out within this study. Six healthy volunteers first underwent stimulation of the Thumb Auricular Acupoint (TAA) and then stimulation of the Brain Stem Auricular Acupoint (BSAA). The results of the study are as follows: The stimulation by the needle placed in the TAA of the left ear produced an increase in activation bilaterally in the parietal operculum, the region of the secondary somatosensory area SII. Stimulation by the needle placed in the BSAA of the left ear showed a pattern that largely overlapped regions belonging to the pain matrix, which had been shown to be involved in previous somatic acupuncture studies, but with local differences in the left amygdala, anterior cingulate cortex, and cerebellum. Some differences in the activation patterns between TAA and BSAA stimulations were noted. This supports the specificity of the two acupoints. Romoli *et al.* stated that the results provide preliminary evidence on the specificity

of those two auricular acupoints [14].

The objective of the study reported in Ref [15] was to observe the anesthetic effect of combined superficial anesthesia and auricular point injection in patients undergoing nasal endoscopy surgery. Forty patients for nasal endoscopy surgery were randomly divided into a combined auricular point injection and superficial anesthesia group (20 patients, group A) and a simple superficial anesthesia group (20 patients, group B). Groups A and B accepted superficial anesthesia 2 times on the bilateral nasal cavities with cotton pieces that were immersed in a mixed solution of 30 mL 1% tetracaine and 2 mL 0.1% adrenaline. In group A, bilateral auricular points of Shenmen and Waibi (external nose) were injected with 0.1 mL vitamin B1 solution before the superficial anesthesia. The patients were observed for 10 minutes, after which the surgery was carried out. The patients only received a small amount of a vasoactive substance and fentanyl during the surgery (according to changes in blood pressure, heart rate and pain sensation). The results of the study showed a total effective rate of 90% in group A, which was significantly better than that in group B (75%, $P < 0.05$). The rate of using analgetic and vasoactive substances in group A was obviously less than it was in group B. The author concluded that combined auricular point injection and superficial anesthesia had a good anesthetic effect for patients undergoing nasal endoscopy surgery [15].

Another study [16], which is also mainly about liquid EA, was performed by Chinese researchers. The objective of the study was to explore an effective method for the prevention and the treatment of procedural pain in dressing changes of burn wounds. In that study, 90 patients with burn injuries were randomized into 3 groups (30 in each group). In group A, fentanyl citrate injection was used at the acupoints Jiaogan, Fei, and Neifenmi on the ear and at the corresponding injury area (0.25 mL at each point). In group B, 1 mL fentanyl citrate injection was applied subcutaneously in the deltoid muscle. In group C, 1 mL of 0.9% sodium chloride injection was applied subcutaneously in the deltoid muscle. The authors of the study used the visual analogue scale (VAS) to evaluate the analgesic effect before, during and 10 minutes after dressing change in the patients of the three groups separately. The researchers from China stated that no differences in VAS scores before dressing change were found among the three groups

Table 1 Examples of substances used for and indications treated by liquid acupuncture [11]

Author	Injected substance (amount)	Frequency of injection	Point used	Indication
Zhang S	Water (0.2 mL)	Twice daily	Appendix point	Appendicitis
Qui XY	0.5% – 2% procaine, Vit B1	–	Shenmen, Urinary tract, Lower segment of rectum	Retention of urine
Niu ML	Vit K3 (0.1 mL)	Once a day for three days	Uterus, Diaphragm	Dysfunctional uterine bleeding
Li YS	Penicillin (1:100, 0.1 mL)	Twice daily	Helix 3 (Lunsan), Helix 4 (Lunsi)	Acute tonsillitis

($P > 0.05$). Compared with the VAS scores before dressing change, the VAS scores during and after dressing change were not different in the patients of group A (both $P > 0.05$). However, the VAS scores for patients in groups B and C were significantly different (all $P < 0.05$). The authors noticed that the VAS scores during and after dressing change in group A were lower than those in groups B and C (all $P < 0.05$) and that the scores in group B were lower than those in group C ($P < 0.05$). They concluded that a small-dose fentanyl injection at auricular points achieved a definite analgesic effect on procedural pain in dressing changes of burn wounds and that the effect was superior to that obtained by using a subcutaneous injection of fentanyl [16].

The author of the next study to be introduced observed that numerous patients with primary symptoms of vertigo exhibited cervical segmental muscular imbalance and increased tension in the masticatory musculature. He stated that this is frequently associated with functional blockades, especially in the joints of the head and upper cervical spine. The author held that special receptors of the small vertebral joints and muscle insertions at the cervicocranial transition were very important. Sauer [17] stated that evidence indicates that neuroanatomic structures between these receptors and the central vestibular and cochlear core area of the brain stem can explain the vertigo symptoms, as well as the frequently associated tinnitus, headaches or otalgia. One of the therapeutic approaches is the interruption of the pathological reflex arcs in order for muscle tension to be resolved and imbalances to be equalized. This leads to a recession of the nociceptive stimulus to the brain stem and its core centers. Also, in this study, liquid acupuncture was used: Neural therapeutic injections were performed at acupuncture points at the cervicocranial transition, the ear, and maxillary area, as well as needle acupuncture of the head, ear, and hand. In single cases, improvements of the vertigo symptoms was noticed after only one treatment session. The author concluded that "among other methods, spinovestibular tests according to Romberg and Unterberger can be employed to objectify treatment results" [17].

Two additional articles related to the topic liquid EA are listed in the scientific database PubMed. The articles "268 cases of myopia treated with injection and pellet pressure at auriculoacupoints" and "Auricular points injection for 76 cases of chloasma" are, however, either written in Chinese [18, 19] or no abstract is available.

3. Liquid Acupuncture in Practice

As already mentioned in the introduction, the German Academy for Acupuncture published an article related to liquid acupuncture in 2014 [1]. In that paper, Ramme presented three case reports, which will be discussed shortly in the following. The first case is a 56-year-old man with strong back pain. A wheal was set on the patient's ear in the field of the reflex of the deep back. In addition, the patient received a prescription for a painkiller, which he could take when needed. The patient was pain free after only one day of treatment, so he did not need the painkillers. This is a really fascinating example of the effectiveness of this meth-

od. A possible explanation might be that the wheal pressed on the free nerve endings in the subcutaneous tissue of the ear. The skin nerves then transmitted this nerve impulse further into the brain so that the original pain stimulus was inhibited by an anti-irritation. The strong effect of liquid acupuncture may be ascribed to the variety of nerve endings that can be stimulated in parallel. Therefore, a strong anti-irritation can be triggered in the brain [1]. Another example is a 68-year-old female patient who suffered from soft tissue and joint pain. Additionally, she suffered from severe burning pain in the area of the right shoulder. In the first session, a wheal was set in the ear (in the area of the right shoulder reflex localization). Two days later, the patient reported that the burning part of the pain had disappeared. Three treatments later, she felt significantly better [1]. The last case is a 73-year-old patient who had strained his right upper arm. A therapy with conventional painkillers was not possible because he needed to take blood thinners, so he decided to try liquid acupuncture. After only two treatments at an interval of three days, the patient was painless [1]. These three cases show the effectiveness of liquid acupuncture in an impressive way. Nevertheless, that these are only some results from case reports and that these effects must be confirmed or refuted in clinical trials or multicenter studies need to be mentioned.

In addition, indications other than pain relief have been reported: Two institutions from Germany have written on their websites that the injection of liquids into an EA point can help a patient to stop smoking [20, 21]. This is said to have been practiced since 1999. Fumexan® developed its own therapy in which the effect was additionally optimized *via* bioresonance. The authors of the website say that this kind of smoking cessation is without the usual side effects. They claim that most of the patients are non-smokers after just one treatment [21]; however, no scientific work on this topic could be found in renowned databases.

4. Conclusion

As a short conclusion, we can state that liquid EA might have many benefits in the therapy for different diseases, especially in pain relief, and that some scientific papers confirm this statement. However, we must mention that this kind of treatment is not commonly used in Europe. In the Western world, most people have never heard of the term pharmacopuncture or the term liquid EA in general. Thus, further research has to be done to build some basis for justifying clinical application of this very interesting and promising kind of therapy. The first step has been taken by the German Academy of Acupuncture! The Academy offers "One day training courses" in "Liquid Acupuncture" [22].

In summary, we can state that much research remains to be done in this interesting field. In particular, the following issues should be addressed:

- How long does the effect of a single session last?
- How many injections may be performed over time on the same auricular point/area?
- Is there a different therapeutic effect between subcutaneous and intracartilaginous injections?

- How do the side effects from these injections compare with those from, for example, EA needles or semi-permanent needles?

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Conflict of interest

The authors declare that there are no conflict of interest.

ORCID

Daniela Litscher. <http://orcid.org/0000-0003-1883-3521>.
Gerhard Litscher. <http://orcid.org/0000-0001-6287-0130>.

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