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Literature Research

Clinical application rules of different micro needle system therapy[☆]Jing XU (徐晶)^a, Jing SHI (石晶)^b, Jian-ling WANG (王建岭)^c, Chun-sheng JIA (贾春生)^{a,*}^a School of Acupuncture, Moxibustion and Tuina, Hebei University of Chinese Medicine, Shijiazhuang 050200, China (河北中医学院针灸推拿学院, 石家庄 050200, 中国)^b School of Basic Medical Sciences, Hebei University of Chinese Medicine, Shijiazhuang 050200, China (河北中医学院基础医学院, 石家庄 050200, 中国)^c Office of Academic Affairs, Hebei University of Chinese Medicine, Shijiazhuang 050200, China (河北中医学院教务处, 石家庄 050200, 中国)

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ABSTRACT

Different micro needle system therapies have different advantages and characteristics. However, at present, the dominant diseases for which each therapy is appropriate are positioned relatively vaguely, and even the acupoint selections for the same disease are different. The clinical application of the dominant disease and application characteristics of each micro needle system therapy is a scientific problem that needs to be explored urgently. Based on the previous data mining study of the clinical application of auricular acupuncture, scalp acupuncture, abdominal acupuncture, eye acupuncture, wrist-ankle acupuncture, hand acupuncture, the second metacarpal bone lateral needling, facial acupuncture, mouth acupuncture and nose acupuncture, the diseases reported more in the clinical literature of each therapy were extracted to find out the same symptoms applicable to different micro needle systems. The clinical application and differences of different micro needle systems for the same disease were compared horizontally, and it demonstrated that the second metacarpal bone lateral needling, facial needle, mouth acupuncture and nose acupuncture were biased towards a partial corresponding therapeutic relationship between one part and the other part, and the eye acupuncture was biased to interfere with the whole by adjusting the function of the organs, and the auricular, scalp and abdominal needles had the both characteristics, and the wrist-malleolus acupuncture and hand acupuncture were often used in various disorders of the meridian-collateral level. The differences were researched and summarized to more accurately guide clinicians in the application of different micro needle system therapies.

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Introduction

The micro needle system generally refers to a general term of various acupuncture therapies for treating diseases by acupuncture and other methods which stimulate specific parts of the human body. Different micro needle system therapies are independent therapeutic systems, which are characterized by concentrated acupoints, simple manipulation and unique curative effect. Due to the increasing clinical and experimental research, a relatively complete theoretical system has gradually formed, which has become an important option for clinical decision of acupuncture. *The National Standards of the People's Republic of China - The Standards for the Operation of Acupuncture and Moxibustion*, which was formulated and published by the Standardization Administration of the People's Republic of China, deals with the standardized operation of the scalp acupuncture, auricular acupuncture, eye acupuncture,

nose acupuncture, oral lip acupuncture, and wrist-ankle acupuncture in micro needle system therapy. However, there is still a lack of comprehensive and systematic research on the suitable diseases and the acupoint selections in different micro needle system therapies.

Materials and methods

In the early stage, relied on the National Natural Science Foundation of China, with modern computer data mining technology, a literature database on puncturing and moxibustion technique of acupuncture and moxibustion [1] was established. The literature data on micro needle system therapy which was derived from the Chinese Journal Full-text Database (CNKI), Wanfang Database and VIP Database (VIP) from January 1, 1958 to December 31, 2017 was searched, extracted, entered and mined. The “medicine health science” was taken as the subject of research. The name of the micro needle system therapy was used as the subject term. The “fuzzy” search was conducted after that the “Chinese and English extended search” option was removed. The clinical application of the auricular acupuncture, scalp acupuncture, abdominal acupuncture, eye

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Table 1
Frequency table of different micro needle system therapy from clinical report.

Micro needle system	Total number of diseases	Total frequency	Diseases with reported frequency being ranked on the top 20% and the numeric value of the reported frequency being not less than 1%
Auricular acupuncture	211	1 777	Insomnia (182), myopia (96), constipation (67), vertigo (64), acne (60), abdominal pain during menstruation (59), hiccup (58), depression (52), headache (51), obesity (47), rib-side pain (47), retention of urine (45), postoperative pain (45), enuresis in children (37), sty (30), menopausal symptoms (28), sinusitis (28), flat wart (24), smoking cessation syndrome (22), surgical pain (22), chloasma (21), urticaria (21), sinew injury (20)
Scalp acupuncture	102	587	Stroke and the sequelae (217), lumbar and leg pain (18), pediatric cerebral palsy (18), headache (17), dementia (17), vertigo (16), cervical spondylosis (15), hiccup (13), facial paralysis (13), insomnia (11), tremor (11), <i>yinfei</i> (aphasia and paralysis) (11), enuresis in children (10), enuresis (9), retention of urine (8), scapulohumeral periarthritis (7), infantile convulsion (6), epilepsy (6), loss of voice (6), depression post stroke (6)
Abdominal acupuncture	91	647	Cervical spondylosis (78), lumbar and leg pain (61), stroke and the sequelae (56), knee osteoarthritis (35), vertigo (33), Insomnia (30), scapulohumeral periarthritis (26), abdominal pain during menstruation (23), obesity (21), facial paralysis (16), menopausal symptoms (15), chronic pelvic inflammatory (13), headache (13), chronic fatigue syndrome (12), constipation (10), infertility (10), <i>bi</i> -syndrome (9), retention of urine (8), lumbar pain (8)
Eye acupuncture	42	178	Stroke and the sequelae (54), lumbar and leg pain (13), headache (9), hiccup (8), insomnia (7), depression (7), vertigo (6), facial paralysis (6)
Wrist-ankle acupuncture	83	328	Sinews injury (34), scapulohumeral periarthritis (24), lumbar and leg pain (21), insomnia (17), surgical pain (17), stroke and the sequelae (14), headache (13), <i>bi</i> -syndrome (12), cervical spondylosis (11), herpes zoster (10), facial paralysis (8), abdominal pain during menstruation (8), enuresis in children (6), stiff neck (5), palpitations (5), toothache (4), urticaria (4)
Hand acupuncture	43	199	Sinews injury (75), lumbar and leg pain (18), enuresis in children (15), asthma (9), cervical spondylosis (8), heel pain (7), constipation (6), pain (5), stiff neck (5)
The second metacarpal bone lateral needling	24	54	Acute lumbar sprain (9), ankle injury (4), knee joint injury (4), cervical spondylosis (3), gastrocnemius muscle injury (3), constipation (3), epidemic conjunctivitis (3)
Facial acupuncture	12	17	Chloasma (4), acne (2), postpartum reduced or absent lactation (2)
Mouth acupuncture	10	22	Irritable bowel syndrome (5), sciatica (5)
Nose acupuncture	18	39	acute lumbar sprain (5), scapulohumeral periarthritis (5), surgical pain (5), hiccup (5)

acupuncture, wrist-ankle acupuncture, hand acupuncture, the second metacarpal bone lateral needling, facial acupuncture, mouth acupuncture and nose acupuncture have been studied successively [2–8]. After the results of the search had been manually screened, the database recorded a total of 1 777 auricular acupuncture documents, 587 scalp acupuncture documents, 647 abdominal acupuncture documents, 178 eye acupuncture documents, 328 wrist-ankle acupuncture documents, 199 hand acupuncture documents, 54 s metacarpal bone lateral needling acupuncture documents, 17 facial acupuncture documents, 22 mouth acupuncture documents and 39 nose acupuncture documents. However, there were many results in the study that various therapies pointed to the same symptom. In other words, there was the same symptom in the indications of two or more micro needle system therapies. It caused that when the clinician faced a certain clinical problem, although there were a variety of micro needle system therapies to choose from, and it was still difficult to select the best choice quickly. This paper intended to extract the common seen diseases reported in the clinical study of each therapy, including auricular acupuncture, scalp acupuncture, abdominal acupuncture, eye acupuncture, wrist-ankle acupuncture, hand acupuncture, the second metacarpal bone lateral needling, facial acupuncture, mouth acupuncture and nose acupuncture, to find out the same symptoms applicable to different micro needle systems, and to horizontally compare the clinical applications and differences of different micro needle systems for the same disease. Finally it was hoped to guide the clinicians how to choose different micro needle system therapies more accurately in clinic.

Results

The frequency of various micro needle system therapies treating diseases that was clinically reported (that was the number of

clinical studies that were searched and met the criteria) was extracted by the literature data warehouse of acupuncture and moxibustion method in the micro needle system therapy. The research team considered that there were great differences between the number of the reported studies and the real situation, so the frequency of the reported diseases was ranked on the top 20% of all the diseases and the numeric value of the reported frequency was not less than 1% were organized and sorted (the names of the diseases listed in the table were strictly in accordance with the original literature). See Table 1.

The two or more different micro needle system therapies selected in the treatment of the same disease in Table 1 were summarized and sorted, and all the different micro needle system available for common diseases were obtained (the specific reported frequency was shown in Table 1). See Table 2.

Discussion

In recent decades, micro needle system therapy has developed rapidly, the types of therapies have increased, the scope of application has expanded, and the research has gradually deepened. However, the vague clinical indications and the options lacking evidence bring practical problems for beginners and clinicians who are not yet experienced, including that, when facing a certain disease, they do not know how to choose the appropriate therapy from more than ten kinds of micro needle systems, and how to use micro needle system therapy to get the fastest and best effect.

Different micro needle system therapies have different effects on diseases, and if the most appropriate method can be selected, the therapeutic effect can be maximized. According to the comprehensive research results, internal medicine diseases such as headache, insomnia, and vertigo etc. were preferred for the treatment of auricular acupuncture, scalp acupuncture and

Table 2
Different options of micro needle system for common diseases.

Department	Common seen diseases	Micro needle system
Internal medicine	Headache	Auricular, scalp, abdominal, eye, and wrist-malleolus acupuncture
	Insomnia	Auricular, scalp, abdominal, eye, and wrist-malleolus acupuncture
	Vertigo	Auricular, scalp, abdominal, and eye acupuncture
	Facial paralysis	Scalp, abdominal, eye, and wrist-malleolus acupuncture
	Stroke and the sequelae	Scalp, abdominal, eye, and wrist-malleolus acupuncture
	Constipation	Auricular, abdominal, hand acupuncture, the second metacarpal bone lateral needling
	Obesity	Auricular and abdominal acupuncture
	retention of urine	Auricular, scalp, and abdominal acupuncture
	Hiccup	Auricular, scalp, eye, and nose acupuncture
	Depression	Auricular, scalp, and eye acupuncture
	Cervical spondylosis	Scalp, abdominal, wrist-malleolus, and hand acupuncture, and the second metacarpal bone lateral needling
	Scapulohumeral periarthritis	Scalp, abdominal, wrist-malleolus, and nose acupuncture
	Lumbar and leg pain	Scalp, abdominal, eye, wrist-malleolus, hand, and mouth acupuncture
Tramotology and orthopedics	Knee osteoarthritis	Abdominal acupuncture
	lumbar pain	Abdominal acupuncture
	Stiff neck	Wrist-malleolus, and hand acupuncture
	Acute lumbar sprain	The second metacarpal bone lateral needling, nose acupuncture
	Ankle injury	The second metacarpal bone lateral needling
	Knee joint injury	The second metacarpal bone lateral needling
	Gastrocnemius muscle injury	The second metacarpal bone lateral needling
	Surgical pain/postoperative pain	Auricular, wrist-malleolus, and nose acupuncture
	Abdominal pain during menstruation	Auricular, abdominal, and wrist-malleolus acupuncture
	Menopausal symptoms	Auricular, and abdominal acupuncture
Gynecology	Enuresis in children	Auricular, scalp, wrist-malleolus, and hand acupuncture
Dermatology	Urticaria	Auricular, and wrist-malleolus acupuncture

abdominal acupuncture. These three kinds of acupuncture methods can mainly regulate the function of *zang-fu* organs in the human body to achieve the clinical effect. In addition, some internal medicine diseases can also be treated with auricular acupuncture and wrist-ankle acupuncture as complementary therapy. The tramotology and orthopedics diseases of injuring the sinews and *bi* syndromes on neck, shoulder, lumbar, and leg etc. were treated with wrist-ankle acupuncture, the second metacarpal bone lateral needling, or hand acupuncture. Tramotology and orthopedics pain and acupuncture anesthesia were mostly treated by auricular acupuncture, wrist-ankle acupuncture, and nose acupuncture. It indicated that these acupuncture methods had a good analgesic effect against pain diseases. Gynecological diseases such as abdominal pain during menstruation, and menopausal symptoms etc. could be treated by auricular acupuncture and abdominal acupuncture as the first choice to adjust the function of the *zang-fu* organs, and the pain during menstruation can be treated combined with wrist-ankle acupuncture which was good at treating pain. Pediatric patients have hyperactive characteristics, it was not easy to apply treatment with body acupuncture needle retention, and micro needle system therapy can be considered. Enuresis in children was mostly treated with auricular acupuncture, scalp acupuncture, wrist-ankle acupuncture and hand acupuncture. Cerebral palsy could be treated by scalp acupuncture. In addition, ear, nose and throat diseases such as myopia and sty etc. could be treated with auricular acupuncture. Urticaria was preferred for the treatment of auricular acupuncture and wrist-ankle acupuncture. For acne, we can choose auricular acupuncture. Herpes zoster could be treated by wrist-ankle acupuncture.

According to analysis of the above findings, although acupuncture methods included in this study belonged to the micro needle system therapy, there were some differences in the role to the body. Although the theoretical systems were relatively independent, the various micro needle system therapies described above were in line with the basic theory of holographic medicine. Through researching the holographic correspondence between the partial body and the whole body, partial body and partial body, and according to the orderly holographic distribution of the relevant parts, the purpose of stimulating a certain part of the body to treat the whole body or other parts of the body was achieved.

However, after acupuncture stimulating a certain acupoint of a micro needle system therapy, some tended to have a partial corresponding therapeutic relationship between one part and another part, and some tended to interfere with the whole by regulating the function of the *zang-fu* organs, and there were also some needling method that had both the characteristics.

The distribution of the auricular acupoints is shaped like a fetus inverted in the uterus, which is the epitome of the whole human body, and the position of each auricular acupoint corresponds to a specific part of the human body. *Lingshū* (《灵枢》, *The Miraculous Pivot*) said that “the ear is the gathering of the vessels” and “the conditions of blood and *qi* of the 12 meridians and 365 collaterals all goes through facial orifices and have corresponding manifestation on face”. *Zhèngzhì Zhǔnshéng* (《证治准绳》, *Standards for Diagnosis and Treatment*) said “kidney is the owner of auricular orifices, and the heart is the guest of auricular orifices”. They all indicate that the ear is closely related to each meridian-collateral and *zang-fu* organs. Therefore, auricular acupuncture therapy can not only treat a certain part of the human body, but also regulate the internal *zang-fu* organs, diffuse and unblock *qi* and blood, and coordinate *yin* and *yang*.

Scalp acupuncture and abdominal acupuncture were similar to it. The scalp acupuncture is developed on the basis of traditional science of acupuncture and moxibustion and modern anatomy, neurophysiology and the theory of bio-holography. Its theoretical basis includes not only the traditional *zang-fu* organs and meridian-collateral theory, but also the scalp projection of cerebral cortex function localization [9]. Needling the corresponding acupoints on the head can not only regulate the function of a certain part, but also regulate the function of the *zang-fu* organs and meridian-collateral, and regulate the *qi* and blood of the whole body.

The abdominal acupuncture therapy established by professor Zhi-yun Bo focuses on the theory of *Shénquè* (神阙 CV 8) distributing *qi*, and was based on abdominal holography. Through needling at the shallow, middle and deep levels of the abdomen, different effects including corresponding to a certain part and regulating functions of meridian-collateral and *zang-fu* organs were realized. Therefore, the three kinds of micro-needle system therapy, including auricular acupuncture, scalp acupuncture and abdominal

acupuncture, can achieve the purpose of not only corresponding to a certain partial disease, but also regulating functions of *zang-fu* organs and meridian-collateral, and treating systemic diseases. The applications were mainly for internal medicine diseases, and also for other diseases of each department.

The eye acupuncture therapy established by professor Jing-shan Peng based on the theory including inspection of the eye for diseases recognition, the *zang-fu* organs and meridian-collateral theory of traditional Chinese medicine, and the theory of the five orifices and the eight regions in “*Huángdì Inner Classic*” (《黄帝内经》, *The Yellow Emperor's Inner Classic*), intended to regulate the function of *zang-fu* organs, therefore it was widely used in the diagnosis and treatment of internal medicine diseases.

Wrist-ankle acupuncture and hand acupuncture therapy were all based on the theory of meridian-collateral. The wrist-ankle acupuncture mainly made the body divisions correspond to divisions of the twelve cutaneous regions in the meridian-collateral theory. There were three *yin* meridians and three *yang* meridians through wrist and the ankle respectively, and they were connected with various divisions of the body. Therefore, the disease of each acupoint was consistent with the diseases charged by the twelve meridians. The acupoint of the wrist-ankle acupuncture can also play a therapeutic role in specific acupoint [10]. The hand acupuncture was connected to meridians of the whole body due to the connection between three *yin* meridians of the hand and the three *yang* meridians of the hand in the hand. Therefore, the two micro needle system therapies were mainly applied to treat various disorders by regulating meridian and collateral.

Finally, the second metacarpal bone lateral needling, facial acupuncture, mouth acupuncture and nose acupuncture were mainly applied for *bi* syndrome and sinew injury. Needling the acupoints corresponding to the injury and pain parts played a good

role in unblocking the meridians, quickening the collaterals and relieving pain.

The above recommendations based on the results of data mining were certainly within the scope of micro needle system therapy, but they should be applied flexibly in combination with a variety of other acupuncture methods which did not belong to micro needle systems in order to achieve the fastest and best efficacy.

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