

Literature Review of Research Progress on Acupoint Sensitization

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Keywords: Acupoint sensitization, Hyperalgesia, Meridian distribution, Local distribution, Acupoint selection therapy

Abstract: Acupoint sensitization is a hot research issue in the current acupuncture field. This article reviews the literature related to acupoint sensitization in recent years, summarizes the research progress of acupoint sensitization from the aspects of biophysical characteristics, classification, mechanism of occurrence, and clinical research and application, and provides possible clues for further research on acupoint sensitization..

1. Introduction

Reviewing and sorting out related papers summarises the basic knowledge of acupoint sensitization and the latest related developments in the field, and its clinical application significance. The sensitization of acupuncture points refers to the change of state, as closed state to an active state. Its characteristics are dynamic, specific, universal, etc. There are currently four categories, but they are still increasing with the progress of the experiment. It also has unique clinical characteristics and guiding significance for its distribution. This paper will summarize and analyze the above aspects to provide the corresponding reference for acupoints' theoretical research and clinical application.

2. Concept and Characteristics of Acupoint Sensitization

2.1 Concept of Acupoint Sensitization

Acupoints are parts of the body where the qi (Breath power) from the viscera and meridians are infused and dispersed on the body surface. They are the receptive points, reaction points and conduction points that communicate with the visceral meridians and move and change accordingly^[1]. Acupuncture points generally have two states. When the body functions normally, the acupoints are in a “closed” “silent state”. When the body is in a pathological condition, the acupoints gradually transform into an “open” “active state”. Acupuncture point sensitization is the transformation process from a “quiet state” to an “active state” according to the change of the body's functional state^[2].

2.2 Specific Manifestations of Acupoint Sensitization

The specific manifestations of acupoint sensitization include functional changes and morphological changes. Functional changes such as acupoint pain sensitization, electric sensitization, heat sensitization, photosensitization, etc., the morphological differences are mainly manifested in the transformation of skin colour, local depression or uplift of skin, subcutaneous induration, etc. ^[3]. The role of acupoint sensitization is to reflect the changes in yin and yang of viscera, qi and blood. Sensitizing points appear with the appearance of the disease and disappear with the disappearance of the disease, either near the lesion or at a place far away from the lesion.

2.3 Features of Acupoint Sensitization

There are four characteristics of acupoint sensitization: (1) Dynamic: When the functional state of the viscera changes, the function of the meridians will be affected accordingly, which will lead to changes in the morphology, area, depth of acupoints, functional strength, biophysical characteristics, and chemical composition of tissue cells. This shows dynamic characteristics. (2) Diversity: “Take pain as a source of energy” in Lingshu·Jingjin is the initial stage of the development of acupoints. It is the most primitive meaning of acupoints, which is the same as the pain sensitization of acupoint sensitization. Apart from that, acupoint sensitization also includes heat sensitization, photosensitization, electrical sensitization, morphology sensitization, sound sensitization, and microcirculation sensitization, etc., with diverse characteristics. (3) Universality: Acupoint sensitization diseases are universal. Professor Chen Rixin’s research on 20 diseases found that acupoints’ average heat sensitization rate under pathological conditions is as high as 70%. In addition, the same disease will have multiple meridians or multiple acupuncture points. Just as studies conducted by Li Chunri and others have found that the Sanyin meridian of the hand, Chize, Kongzui, Jingqu, Taiyuan of the lung meridian, and Neiguan of the heart meridian all have heat sensitization^[4]. (4) Specificity: Acupoint sensitization has relative specificity, such as heat sensitization at Yifeng acupoint in facial paralysis, hyperalgesia at pancreas acupoint in acute pancreatitis^[5]. (5) Functionality: Acupoints are closely related to the functions of the viscera. Acupoint sensitization is a real-time and dynamic response to the physiological and pathological conditions of the body and the yin and yang of the viscera, qi, and blood. At the same time, Stimulation of the sensitization point can help to improve the efficacy to some extent. So acupoint sensitization has the dual functions of diagnosis and treatment.

3. Classification of Acupoint Sensitization

3.1 Pain Sensitization

Pain sensitization in acupoints means that when a disease occurs in the viscera or related parts, the sensitivity of the corresponding acupoints to pain increases and pain can occur when compressed with a certain amount of strength. “Tenderness points” is a kind of pain sensitization of acupoints. As early as The Inner Classic of the Yellow Emperor period, the phenomenon of acupoint hyperalgesia has been recognized by doctors and used in clinical diagnosis and treatment. In the Lingshu, it is pointed out that the pain is relieved by pressing the pain points, and this hyperalgesic reaction is used as the basis for selecting acupoints. In Su Wen•Ju Pain Theory: “The pulse cries when the cold air is on the back of the Yu pulse, the blood is weak when the pulse is crying, and the blood is weak when the blood is weak. Press it to get the heat, and the pain will stop if the heat is too hot.” Invasion of cold pathogens, astringent pulse and blood deficiency, pain in the heart and back, pressing on the heat to come and return, pain relief, suggesting that the hyperalgesia has changed with the disease’s course the hyperalgesia has time specificity. These provide clinical diagnosis and treatment ideas. For example, it has been proved that acupuncture at high-sensitivity points is significantly better than that at low-sensitivity points in the treatment of knee osteoarthritis^[6].

3.2 Heat Sensitization

Refers to the disease state; the corresponding acupoints are extremely sensitive to moxibustion heat. After being stimulated by moxibustion heat, it will produce many unique reactions, and the effects are also more apparent. The main manifestations of heat-sensitized acupoints to moxibustion heat reaction are diathermy; heat expansion; heat transfer; local non (micro) heat and remote heat; surface non (micro) heat and deep heat; it can produce acid, swelling, pressure, etc. In other places where the moxibustion sensation is not thermally transmitted, the symptoms will be relieved.

3.3 Electro Sensitization

It is mainly manifested as changes in acupoints' skin potential or electrical conductivity when the viscera is diseased. According to the change or imbalance of the characteristics of the acupoints, the

disease of the related viscera can be determined. There are bibliometrics statistical papers that show that when the body has an infection, electrical sensitivity will appear on the acupuncture points and meridians related to the disease. It is reminded that researchers can guide clinical diagnosis, selection and treatment of acupoints by detecting such electro-sensitive phenomena to achieve the purpose of “preventing the disease first”, “preventing the disease early”, and “preventing the disease from spreading”^[7].

3.4 Other Sensitization

Acupoint photosensitization (abbreviated as photosensitization) refers to the changes in the luminous intensity of acupoints in a pathological state and is detected chiefly by infrared radiation spectroscopy. Studies have seen the broad spectrum of infrared radiation at Neiguan in patients with coronary heart disease and found that the difference between the infrared spectra is more significant than the average spectral value^[8]. Temperature sensitization of acupoints refers to how the body's perception and response to temperature at acupoints change during disease. The stimulation of the pathological state of the illness will activate the temperature-related molecules at the acupoints: heat shock protein (HSP) family, transient receptor channel family (TRP), temperature sensing protein (STIM1), which form different temperature performances for disease stimulation, and also It treats related diseases by stimulating and regulating its temperature.

4. Main Distribution Characteristics of Acupoint Sensitization

The distribution of sensitization points is diverse, but they all have a meridian-visceral-disease correlation and follow the rules of zang-fu syndrome differentiation, meridian syndrome differentiation, and Ashi points. In summary, it is found that the sensitization points of viscera diseases are mainly distributed in specific topics such as Backshu, Mu, Qi, Xiahe, Jiaohui and their surroundings, and there is a clear correspondence with the diseased viscera. Gastrointestinal diseases are mainly distributed in Xiahe points; lung diseases are spread primarily in Backshu and Mu points; heart diseases are distributed primarily to Backshu and Mu points. In addition, the sensitizing points of many meridian diseases are distributed in the lesion area. This is closely related to the fact that the Ashi point, tenderness point and trigger point of painful infections have been found in modern medical research. Cervical spondylosis is mainly distributed in the cervical spine; lumbar disc herniation is distributed primarily in the lumbar, abdomen, sacral area and the full sun bladder meridian; knee osteoarthritis is mainly distributed round the knee joint; herpes zoster neuralgia is distributed primarily in the bladder meridian; Tinnitus is principally distributed in Foot Shaoyang Gallbladder Meridian and Du Channel.

5. Clinical Significance of Acupoint Sensitization

One of the critical significances of the research on acupoint sensitization is totreatment of diseases and guide the clinic for the diagnosis and to improve the clinical efficacy of acupuncture and moxibustion. In summary, its clinical significance lies in 1. Respond to the location of the disease, diagnose the disease 2. Guide the selection of treatment points 3. Expand the scope of treatment options.

5.1 Reflect the Location of the Disease and Diagnose the Disease

“Take pain as a source” points out that the “pain point” on the body surface is where the acupuncture points are, which is the positive reaction point of the body's disease on the body surface. It shows that acupuncture points have the function of diagnosing diseases. The distribution characteristics of acupoint sensitization can distinguish its meridian and its relationship with viscera, which is helpful for the diagnosis of diseases.

5.2 Guiding Treatment Selection

In Lingshu·Back, there is a description of “if you want to get it, you should experience it according to its place, and it should be painful in the middle, it is also the same”. It pointed out that the method of verifying acupuncture points is “according to the point, it should be painful in the middle. That is, pressing the “pain points” on the body surface can relieve the body's pain and discomfort, indicating that acupuncture points have the effect of curing diseases. Detecting the sensitization reaction of the corresponding points of the disease can assist in clinical acupoint selection and positioning. There are many clinical acupoint sensitization distribution forms of many illnesses. For example, the acupoint sensitization points of facial paralysis are mainly distributed on the face, hands and feet, Yangming meridian points and specific points, etc. And the distribution of sensitization points is different in different periods of onset ^[9]. Therefore, clinical point selection cannot be limited to a single point selection method. The three methods should be used in combination and strive to find the most suitable sensitizing point when selecting acupoints to achieve a multiplier therapeutic effect.

5.3 Expanding the Scope of Treatment Options

The “Pain-based” in Lingshu·Jingjin, “Ashi Point” invaluable prescription for an emergency, and “Receiving Disease” in Acupuncture and Moxibustion Zishengjing are all dynamic, Functional characteristics. But these three only belong to the category of “pain sensitization” of acupoint sensitization. Studies have found that the distribution of sensitizing acupoints is not precisely the same as that of traditional acupoints. For example, the overlap rate of pain-sensitive acupoints and traditional acupoints is 76%, and that of heat-sensitive acupoints is 48.76%^[10]. This dramatically expands the range of acupoints that can be selected during treatment.

5.4 Summary

There are also related descriptions of acupoint functions in Lingshu·Nine Needles, and Twelve Originals, such as “the five internal organs are diseased, and the twelve originals should come out”, “the five internal organs are diseased, and the twelve originals should be taken”, etc. It can be seen that acupuncture points have dual diagnosis and treatment functions, reflecting the dynamic and functional characteristics of acupuncture points, which is precisely the same as modern “acupoint sensitization”.

6. Conclusion

Acupoint sensitization is not a denial of traditional acupoints but a development, innovation, and supplement based on inheritance, which expands the distribution range of acupoints and strengthens acupoints' functional and dynamic characteristics. Sensitizing acupoints may be a potential target for acupuncture and moxibustion to treat diseases. It provides a new opportunity for TCM “targeted therapy” and is an essential guarantee for improving the efficacy of acupuncture and moxibustion. Acupoint sensitization is a positive sign of the body as a disease state and a pathological change of the acupoint itself. There is a specific connection with the target organ. This particular connection may be the key to improving the clinical efficacy of acupuncture and moxibustion. However, the specific mechanism and mode of action of sensitization need to be further explored. The current research is still based on clinical research, and only the sensitization phenomenon and distribution law of certain single disease species and the specific relationship. In addition, there are problems such as lax scientific research design, small sample size, and lack of unified judgment methods and standards, which inevitably lead to certain limitations and biases in the essence, positioning, and selection of sensitized acupoints to a certain extent. I hope that in the future, there will be more and more mature researches in the field of acupoint sensitization, and strengthen the study of other forms of sensitization, to enrich and improve the theory of acupoint sensitization and strive to make acupoint sensitization be widely used in clinical practice.

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