

Acupuncture plus Three-step Analgesic Ladder Principle for Cancer Pain Relief: Clinical Observation on 24 Cases

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摘要 目的: 观察针刺配合"三阶梯"治疗癌性疼痛的疗效。**方法:** 36 例癌性疼痛患者随机分为治疗组和对照组。治疗组 24 例, 予针刺配合"三阶梯"止痛。对照组 12 例, 仅予"三阶梯"止痛。**结果:** 治疗组总有效率为 95.8%, 其中显效率为 54.2%; 对照组总有效率为 83.3%, 其中显效率为 25.0%, 治疗组与对照组疗效相比, 有统计学意义($P < 0.05$)。针刺配合"三阶梯"止痛原则能进一步提高疗效。

关键词 肿瘤; 疼痛; 针刺疗法

Abstract Objective: To observe the therapeutic efficacy of acupuncture plus three-step analgesic ladder for cancer pain relief. **Method:** Thirty-six cases with cancer pain were randomized into a treatment group and a control group. Twenty-four cases in the treatment group were treated with acupuncture plus three-step analgesic ladder approach and 12 cases in the control group were treated with three-step analgesic ladder approach alone. **Result:** The total effective rate and marked effect rate of the treatment group were 95.8% and 54.2% respectively, while those of the control group were 83.3% and 25.0% respectively, indicating a significant statistical difference ($P < 0.05$) in terms of the therapeutic efficacy of the two groups and acupuncture plus three-step analgesic ladder approach can further improve the therapeutic efficacy.

Key Words Tumor; Pain; Acupuncture Therapy

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Cancer pain is one of the most common symptoms of those suffering from malignant cancer. In 1992 the WHO proposed a goal of free from cancer pain until the year of 2000; but, this goal is still far from a reality. Currently the three-step analgesic ladder principle recommended by WHO was mainly adopted for cancer pain, enabling about 90% of the cancer pain cases to get pain relief with its stable and reliable effect. However, it remains a urgent job for clinicians to find other synergic therapies along with the

three-step analgesic ladder approach. Traditional Chinese medicine has unique action in helping or replacing painkillers for pain relief through herbal decoction, external application and acupuncture, especially acupuncture alone or in combination with the three-step analgesic ladder approach. The authors of this article investigated the therapeutic efficacy on 24 cancer pain cases and now the report is as follows.

Clinical Data

1. General data

The observation objects were collected from January 2007 to March 2007: the middle or late-stage cancer inpatients confirmed by pathology or cytology from oncology department, respiration department, general surgery and special care units of Shuguang

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Hospital, and they all suffered from pain or pain even after oral administration of painkillers and didn't show any allergic reaction to acupuncture. Thirty-six cases were randomized into a treatment group and a control group by the ratio of 2:1 according to the serial number of envelopes.

Among the 24 cases in the treatment group, female cases: 8; male cases: 16; ages: 39-82 years old; median age: 54.5 years old. According to the WHO TNM staging system, stage II: 1 case; stage III: 9 cases; and stage IV: 14 cases. According to the pain of nature: visceral pain: 14 cases; neuralgia: 3 cases and body pain: 7 cases.

2. Grading standard of cancer pain^[1]

Numeric rating scale (NRS) was adopted for pain intensity: numbers from 0 to 10 are used to describe painless or maximum pain and the patients are asked to circle the number of his pain degree, and then the number is converted into verbal rating scale (VRS).

Free of pain: 0; Mild degree: 1-4; moderate degree: 5-6; and severe degree: 7-10.

Therapeutic Approach

1. Treatment group

Drug therapy: prescriptions based on the three-step analgesic ladder principle (i.e., nonopiods → mild opiods → strong opiods).

Acupuncture therapy: Therapeutic project was made upon summarizing laws of point selection on the basis of 43 pain-related articles as well as clinical experience of cancer experts from 615 papers involving 57,859 pieces of cancer information collected by "China Modern Acupuncture Database" (1954-2005).

The therapeutic principles are to regulate zang-fu organs and circulate qi to strengthen the anti-pathogenic qi, remove pathogenic factors and stop pain by selecting points along the running

courses of meridians and some experience points. Points corresponding to the location of pain are also selected, for example, Lieque (LU 7), Baihui (GV 20) and Shenting (GV 24) for headache; Tianzhu (BL 10), Lieque (LU 7) and Houxi (SI 3) for neck and nape pain; Kongzui (LU 6), Neiguan (PC 6) and Sanyinjiao (SP 6) for chest and back pain; Kongzui (LU 6), Neiguan (PC 6) and Jianzhen (SI 9) for shoulder and back pain; Zusanli (ST 36), Sanyinjiao (SP 6) and Xingjian (Liv 2) for pain in the hepatic area; Liangqiu (ST 34), Zusanli (ST 36) and Sanyinjiao (SP 6) for gastric pain; and Zusanli (ST 36), Shangjuxu (ST 37) and Sanyinjiao (SP 6) for lower abdominal pain.

Tolerable even reinforcing-reducing manipulation by lifting-thrusting was applied upon needling sensation, and then after retaining the needles for 30 min, the needles were removed after another even reinforcing-reducing manipulation by lifting-thrusting. The acupuncture was done once every day.

2. Control group

The patients were only given prescriptions on the basis of three-step analgesic ladder principle without acupuncture therapy.

After 5 times of treatment, the therapeutic efficacy of the two groups was analyzed. Then the patients were continued for treatment targeting pain or primary tumor.

Therapeutic Results

1. Therapeutic efficacy criteria^[1]

The pain intensity, pain-relief lasting time, and types and dose of painkillers of the two groups were all recorded before acupuncture and after 5 treatment times.

Marked effect: the pain alleviated by more than 2 degree;

Certain effect: the pain alleviated by 1 degree;

Failure: the pain got no alleviation.

Table 1. Pre-treatment and post-treatment pain intensity and therapeutic efficacy of the two groups (Cases)

Group		Pain intensity				Therapeutic efficacy		
		No pain	Mild	Moderate	Severe	Marked effect	Certain effect	Failure
Treatment	Pre-treatment	0	5	7	12	13	8	3
	Post-treatment	8	14	2	0			
Control	Pre-treatment	0	2	3	7	3	5	4
	Post-treatment	0	7	4	1			

2. Statistical method

Ridit analytical method was adopted.

3. Therapeutic results

The total effective rate and marked effect rate of the treatment group were 87.5% and 54.2% respectively, while those of the control group were 66.7% and 25.0% respectively, indicating a significant statistical difference ($P < 0.05$) in terms of therapeutic efficacy. The Ridit analysis on pain intensity showed that acupuncture plus three-step analgesic ladder approach got better result than medication alone ($P < 0.05$). The observation on dose of painkillers showed that 2 cases in the treatment group could reduce dose of morphine and 2 cases discontinued morphine but no cases in control group can reduce the dose of painkiller, however the two groups didn't show statistical difference ($P > 0.05$).

Discussion

Cancer pain may occur from the cancer itself or during the anti-cancer treatment [2]. The "Nei Jing (*Yellow Emperor's Internal Classic*)" states that "blockage causes pain and unblock relieves pain". The therapeutic principle of this study is to regulate zang-fu organs and circulate qi to strengthen anti-pathogenic qi, remove pathogenic factors and stop pain by selecting points along the running courses of meridians and some experience points. For example, Lieque (LU 7), Baihui (GV 20) and Shenting (GV 24) were selected for headache: Lieque (LU 7) is regarded a good point for problems in the head and nape; Baihui (GV 20), is a gathering point of all yang meridians and located at vertex that acts to refresh and tranquilize mind; and Shenting (GV 24) is a crossing point of Governor Vessel, bladder meridian and stomach meridian that acts to dredge meridians and stop pain. Tianzhu (BL 10), Lieque (LU 7) and Houxi (SI 3) were selected for neck and nape pain: Houxi (SI 3) and Tianzhu (BL 10) are points of hand-foot Taiyang meridians, the former is one of the eight confluent points that connects with Governor Vessel and acts to dredge meridian qi of the nape area and the latter is used a local point, and the two points together can dredge meridian qi of Taiyang meridians and Governor Vessel and stop pain. Kongzui (LU 6), Neiguan (PC 6) and Sanyinjiao (SP 6) were selected for chest and back pain: Kongzui (LU 6) is a Xi-cleft

point of lung meridian and mainly indicated for acute problems, especially for cancer pain in the chest and back; Neiguan (PC 6) is the Luo-connecting point of pericardium meridian and connects with Yin-wei meridian and acts to soothe chest, benefit diaphragm, clear qi activity of Sanjiao and down-regulate adverse flow of qi; and Sanyinjiao (SP 6) is a crossing point of three foot-Yin meridians that acts to regulate meridian qi and stop pain. Kongzui (LU 6), Neiguan (PC 6) and Jianzhen (SI 9) were selected for shoulder and back pain: Kongzui (LU 6) is a Xi-cleft point of lung meridian and mainly indicated for acute problems, especially for cancer pain in the chest and back; Neiguan (PC 6) is the Luo-connecting point of pericardium meridian and connects with Yin-wei meridian and acts to soothe chest, benefit diaphragm, clear qi activity of Sanjiao and down-regulate adverse flow of qi; and Jianzhen (SI 9) is a local point. Zusanli (ST 36), Sanyinjiao (SP 6) and Xingjian (Liv 2) were selected for pain in hepatic area: Zusanli (ST 36) is a specific point for cancer pain in the abdomen, Sanyinjiao (SP 6) is a crossing point of three foot-Yin meridians that acts to regulate meridian qi and stop pain; and Xingjian (Liv 2) is a Ying-spring point of liver meridian acts to dredge meridians, regulate qi and stop pain; Liangqiu (ST 34), Zusanli (ST 36) and Sanyinjiao (SP 6) were selected for gastric pain: Zusanli (ST 36) is the lower He-sea point of the stomach and therefore is always selected to regulate stomach-qi and stop pain due to whatever cause involving cold, heat, deficiency and excess; Liangqiu (ST 34) is a good point to promote digestion. And Zusanli (ST 36), Shangjuxu (ST 37) and Sanyinjiao (SP 6) were selected for lower abdominal pain: Zusanli (ST 36) is an effective point of abdominal cancer pain; Shangjuxu (ST 37) is the lower He-sea point of the large intestine and acts to regulate intestinal qi and stop pain based on the principle of "He-sea points are always used for problems of fu organs" recorded by "Huang Di Nei Jing (*the Yellow Emperor's Internal Classic*)"; and Sanyinjiao (SP 6) is a crossing point of three Foot-yin meridians and acts to regulate meridian qi and stop pain.

Currently modern medicine has no clear explanation on the complex mechanism of pain relief by acupuncture plus three-step analgesic ladder approach. Acupuncture (plus moxibustion) can promote the synthesis and secretion of β -EP of cancer

pain cases, elevate the β -EP level, compete with morphine to combine with μ receptor, enhance the analgesic action of endogenous opium peptides, lower down the demand of morphine dose of cancer pain cases, maintain or even reduce the present morphine dose and thus produce stronger analgesic action with smaller dose of morphine^[3], and eventually stop cancer pain and improve immune deficiency of lymphocyte. The above-mentioned therapy can also increase the IL-2 secretion and positive expression rate of mRNA expression, and at the same time, increase total sum of T lymphocyte and CD sub-type function, improve immune deficiency of cancer pain cases and subsequently stop cancer pain directly or indirectly^[4]. The "disturbance compensation" doctrine of biocybernetics can be adopted to investigate, i.e., the pain threshold of the body may be increased due to information control (such as needling corresponding ear points) of input reaction, which in turn make up for, diminish or change the pain output reaction resulting from disturbance information (such as liver cancer focus) and eventually eliminate or relieve pain^[5].

The authors of this article realized that needling needs fast and strong stimulation to relieve cancer pain and relatively longer needle retaining, usually more than 30 min, and acupuncture works even better for those who are sensitive to needling sensation and the immediate effect was more significant than the long-term effect; acupuncture works better for

neuralgia and visceral pain than body pain; acupuncture works better for mild and moderate pain than severe pain, but there is no much correlation between types of painkillers and dose; some cases with marked effect can reduce dose of painkiller on the basis of pain relief but may not worsen the pain; and finally the authors conclude that there is correlation between psychological acceptance of the patients and therapeutic efficacy.

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Three Step Analgesic Ladder of the World Health Organization

Step 1

Acetaminophen 325 –650 mg po q4-6h; Salicylates: ASA 325-650 mg po q4h; NSAIDS (as appropriate); Tramadol 50-100 mg po q4-6h

If pain persists, maximize nonopioid and add step 2 opioid

Step 2

Codeine 30-90 mg po q4h; Dihydrocodeine 32 mg po q4h; Hydrocodone 5-10 mg jpo q4-6h; Oxycodone 5mg po q6h

If pain persis at step 2, increase dose of opioid or change to step 3

Step 3

Morphine IR 15-30 mg po q4-6h; Oxycodone 7.5-10 mg po q4-6h; Hydromorphone 4 mg po q4h; Fentanyl 50 mg/hr x 72hr