

Pain-relief and movement improvement by acupuncture after ablation and axillary lymphadenectomy in patients with mammary cancer

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Summary

Introduction: In the traditional Chinese medicine (TCM), pain and movement restrictions are considered as the result of a blocking of the "Jing-Luo-system" or of a disordered flow of the Jing-Qi in the "Jing-Luo-system".

Patients and methodology: In this study 48 patients with mammary cancer after ablation and axillary lymphadenectomy were treated with acupuncture (group I); a control group of 32 patients with the same operation but without acupuncture was compared (group II).

Results: The results showed a significantly higher maximum abduction angle (AA) at the first treatment immediately after acupuncture without pain (59.1° vs. 80.4° , $p < 0.001$) with respect to maximum tolerable pain barrier (73.6° vs. 92.3° , $p < 0.001$). Between group I (12.3%) and group II (50%) there was a statistically significant difference ($p < 0.01$) in the appearance of pain in the operation field in the rest position on the 5th postoperative day, while on the 7th postoperative day 8.3% vs. 12.5% and at the time of discharge a significant difference could not be seen ($p > 0.05$). The percentage of patients with pain during arm movements showed a statistically significant difference between group I and group II on the 5th postoperative day (81% vs. 100%, $p < 0.01$), on the 7th postoperative day (43% vs. 96.9%, $p < 0.01$) and at time of discharge (27.1% vs. 65.6%, $p < 0.001$). The differences in the abduction angle between group I and group II were also statistically significant on the 5th postoperative day at indolency (89.3° vs. 74.5° , $p < 0.001$) with respect to maximum tolerable pain (105.8° vs. 87.4° , $p < 0.001$). The differences in the abduction angle on the 7th postoperative day at indolency (97.5° vs. 81.2° , $p < 0.001$) and at maximum tolerable pain (118.5° vs. 93.4° , $p < 0.001$) were statistically significant. This statistically significant difference in the maximum abduction angle between group I and group II at indolency (116.1° vs. 91.5°) with respect to maximum tolerable pain (129.4° vs. 112.7° , $p < 0.001$) could be observed until discharge.

Discussion: Acupuncture seems to be an effective treatment to relieve pain and improve arm-movements after ablation and axillary lymphadenectomy. The "Xie-technique" is used at the main acupuncture points and the patient's feeling must be particularly considered. The combination of the different main points with the correctly selected additional acupuncture points – referred to the basic state and the pre- und post-operative state of the patient – are very important for a successful application of acupuncture.

Key words: Acupuncture; Breast cancer; Axillary lymphadenectomy; Pain; Arm movement.

Introduction

Qi (life energy) is the source of life in traditional Chinese medicine (TCM). All processes of life are controlled by the Qi. A weakened Qi leads to a hypofunction of all organs. Without Qi life is impossible. There are different kinds of Qi: the original Qi, coming from the parents and being accumulated in the "kidneys", or the Jing-Qi running in the meridian [1].

In TCM pain and movement restrictions are considered as a result of a blocking of the Jing-Luo-system or of a disordered flow of the Jing-Qi in the Jing-Luo-system [2].

If the Qi, the blood, and the nutrition in the Jing-Luo-system can flow freely, no pain will appear. If pain appears, the Jing-Luo-system in the organism is blocked.

During surgery the meridians (Jing- and Luo meridian) are injured in the corresponding operation field. In this way, the Jing-Qi in the Jing- and Luo meridian is weakened [3].

Furthermore, residues of blood remain in the operation field, become old and may block the Qi-flow. Consequently, the Jing-Qi cannot flow well in the operation field and environment and it stops the flow. Similar to the blocking of the Jing-Luo-system in the organism, pain will appear. After surgery the protection-Qi (Yang-Qi) being on the body surface is also weakened. External forces such as cold and wind have an unprotected influence and remain in the muscles and tendons. Thereby the Jing- and Luo meridians are effected by cold and wind and are blocked. Moreover, the blood-Yin (coldness) – the remaining blood in the operation field being absorbed – has an influence on the organism. The ability to move is restricted by coldness and possibly by fear of pain after the operation [4].

After the axillary lymphadenectomy of patients with mammary cancer, the lung-Jing-meridian in the chest area, the Yang-Ming-meridian in the shoulder area and the Luo-meridian in the liver area are influenced due to the reasons mentioned above. The present study tried to relieve the pain and improve restricted arm movements by acupuncture of patients with mammary cancer after ablation with lymphadenectomy [5].

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Patients and Methods

1. Collective of patients

During the period from October 1996 to September 1997, 42 patients with mammary cancer after ablation and axillary lymphadenectomy were treated with acupuncture. The control group consisted of 32 patients with mammary cancer having the same operation without acupuncture following. The patients' age in both groups (Group I: 52 \pm 2 years; Group II: 56 \pm 3 years) was not statistically significantly different ($p > 0.05$). All patients underwent the same operation (ablation with axillary lymphadenectomy). There was no statistically significant difference in the time of starting acupuncture after surgery between either group ($p > 0.05$). The patients in both groups were discharged on average on the 14th postoperative day (Group I: 13.6 \pm 1.2 days vs Group II: 13.8 \pm 1.3 days).

2. Methods

Two important parameters were examined in the study:

2.1. Pain

Pain intensity was judged by a visual-analysis-scale. If the value on the scale was > 2.5 , pain was assumed. The measurement was taken both in the rest position and during arm movement.

2.2. Abduction angle

The abduction angle was measured under standardized conditions, i.e. at a maximum of tolerable pain. At the first treatment, the abduction angle was measured before and after acupuncture both at indolency and at a maximum tolerable pain; at the following treatments only before acupuncture.

2.3. Acupuncture

In principle, the treatments were effected on the 3rd postoperative day, with further treatments on each 5th and 7th postoperative day, respectively and at discharge. In the control group questions on pain and measurements of the abduction angle were also done on the 3rd postoperative day. The patients lay either on their back or on the side in a comfortable position. After the acupuncture the patients remained in the rest position for 1-2 minutes.

2.3.1. Selection of points

Gb24, SJ6, PC3, Le14, MP19 and Di14 were the main points. Subordinated points were also punctured: Lu2, if the pain radiated to the chest, Lu3 and Di10, if the pain radiated to the inside and the backside of the arm. Di15 and Di16 were punctured, if the patient complained of a convulsive feeling in the shoulder area. Depending on the patient's basic health condition before and after surgery, additional acupuncture points were necessary (He7, Re6 or Re17).

2.3.2. Acupuncture technique

The pure Xie-method with "tiger head shaking"¹ was exclusively applied at the main points, and later the Bu-method with low intensity. The additional points were punctured according to the Bu- or Xie-technique depending on the functions of the points, the point combination and the patient's general condition. The acupuncturist should have a so-called "de-Qi-feeling" during treatment. The patients mostly had a feeling of coldness or heaviness in the operation field. During acupuncture

of Gb24 and SJ6 radiation to the fingers, the chest or the foot of the corresponding side could be observed.

Results

As for the first question on pain, 86% of the patients in group I and 83% in group II ($p = 0.26$) reported pain in the rest position. The maximum painless abduction angle (AA) at the first measurement did not show a difference between group I (59.1°, SD: $\pm 6.8^\circ$) and group II (60.3°, SD: $\pm 6.2^\circ$; $p = 0.71$). But after the first treatment a significantly higher maximum abduction angle (AA) was measured in group I immediately after acupuncture both at indolency (80.4°, SD: $\pm 7.2^\circ$) and also at maximum tolerable pain (92.3°, SD: $\pm 8.7^\circ$, $p < 0.001$). There was no statistically significant difference in the pain feeling before (100%) and immediately after the first acupuncture (93.8%; $p = 0.79$). The appearance of pain during arm movement and the maximum abduction angle with pain before the treatment were not statistically significantly different ($p > 0.05$) in both groups. In group I the maximum AA with pain after the first acupuncture was statistically significantly higher than before (92.3° $\pm 8.7^\circ$ vs 73.6° $\pm 7.9^\circ$, $p < 0.001$). On the other hand, a statistically significant difference regarding the appearance of pain during arm movement before (100%) and after the first measurement (93.8%) could not be observed in group I ($p > 0.79$). On the 5th postoperative day the appearance of pain both in the rest position and during arm movement was statistically significantly different ($p < 0.01$) in both groups (at rest: Group I 12.3% versus Group II 50.0%; during arm movement: Group I, 81.3% versus Group II, 100.0%). The differences in the abduction angle between group I and group II were statistically significant at indolency (Group I: 89.3° $\pm 9.7^\circ$; Group II: 74.6° $\pm 11.2^\circ$, $p < 0.001$) and at maximum tolerable pain (Group I: 105.8° $\pm 11.2^\circ$; Group II: 87.4° $\pm 13.1^\circ$, $p < 0.001$) on the 5th postoperative day.

On the 7th postoperative day, the abduction angles at indolency were on average 98° in group I and 81° in group II. The difference was statistically significant ($p < 0.001$). Correspondingly, the abduction angle showed a statistically significant difference (Group I: 118.5° $\pm 12.2^\circ$; Group II: 93.4° $\pm 11.6^\circ$, $p < 0.001$) at maximum tolerable pain. The percentage of patients with pain during arm movement also showed between group I (44.2%) and group II (96.9%) a statistically significant difference ($p < 0.001$) on the 7th postoperative day. But in the rest position a statistically significant difference between group I (8.3%) and group II (12.5%) could not be seen ($p > 0.05$).

At time of discharge the percentage of patients with pain during arm movement was 27.1% in group I and 65.6% in group II ($p < 0.001$). The pain feeling in the resting position was not statistically significantly different between group I and group II ($p > 0.05$). The differences in the maximum abduction angles between group I (at indolency: 116.1° $\pm 14.8^\circ$; at maximum tolerable pain: 129.4° $\pm 14.5^\circ$) and group II (at indolency: 91.5° $\pm 11.5^\circ$; at maximum tolerable pain: 112.7° $\pm 14.4^\circ$) – both at indolency ($p < 0.001$)

¹ This is a special acupuncture method ("tiger head shaking" is the verbatim translation of it).

and at maximum tolerable pain ($p < 0.001$) – were statistically significant until discharge.

Discussion

Most patients with mammary cancer have pain syndromes after ablation and axillary lymphadenectomy. Only a few papers have examined the incidence of the postoperative pain syndrome. According to Wallace *et al.* [3], a pain syndrome was diagnosed in nearly half the patients with mammary cancer after this operation within one year. The pain is clearly associated with arm movements [3].

According to the traditional Chinese medicine (TCM) the pain after ablation with axillary lymphadenectomy in patients with mammary cancer is of opposing nature.

Yang-pain is based on a disorder of “too much” (repletion syndrome) by the blocking of the Jing- (pain in the operation field) and Luo-meridian (pain on the exterior costal arch) with respect to the bad flow of the Jing-Qi. By stagnation of the Jing-Qi, a feeling of repletion or swelling appears. Therefore the Xie-method is very important during treatment.

The Yin-pain is caused both by a so-called “too less” and by a so-called “too much”. During the operation the organism is systematically weakened. The Yin-pain appears as a pressure pain of the negative influence of “moisture, coldness and wind” owing to the remaining blood-Yin in the operation field such as the local dysfunction of the Jing-Luo-system and the damage to the local protection-Qi [5].

After the operation the blood-Yin remains in the operation field a long time due to the weakness of the Yang-Qi. In addition the protection-Qi in the operation field is impaired. External factors such as cold, moisture and heat can have a slight influence and remain in the body. The flow of the Jing-Qi and the supply of the “Jing” with respect to the essence of life (by abuse of the energy, “heat” can be caused internally) are negatively influenced in the operation field. This is the reason for movement restriction. Therefore, it is necessary to select a Bu-method to support the general condition of health in combination with the Xie-method to influence the coldness/Yin, which has an effect from the outside and inside [1].

This study shows that in patients with mammary cancer after ablation with axillary dissection the feeling of pain can essentially be reduced and the ability to move the arms on the operated side can clearly be improved by acupuncture.

Gb 24 is a mouth point of the tendons influencing and controlling the freedom of movement of the joints [2]. It is a Yin-point of the gallbladder-meridian with the function of eliminating heat and moisture in the gallbladder with respect to the liver area and to uncover the gallbladder-meridian. In this way the feeling of heat and swelling with respect to the convulsive muscle pain in the operation field (inflammation signs) is reduced. Gb24, punctured as a main and distant point according to the Xie-method, is able to reduce the pain on the exterior costal arch and in the axilla. The “moisture and heat” in

Luo- (on the exterior costal arch) and Jing-meridian in the operation field are weakened or reduced. The movement restriction of the shoulder joint is hereby improved.

We have punctured PC3, SJ6 according to the strong Xie-method. The points are taken to activate the pericardium meridian. The pericardium meridian runs from the chest over the operation field to the hand and the inside of the middle finger, while the San-Jiao meridian runs from the 4th finger tip over the shoulder lateral to the hand. Both meridians are connected in the hand. PC3 is a mouth point on the pericardium meridian and is able to regulate the disordered “Jing-Qi” and to let it flow better. SJ3 is a “Jing” – point on the San-Jiao meridian, where the “Qi” runs in the meridian. By stimulating these points, the “Qi” can be activated in both meridians and flow freely so that the “Jing-Qi” cannot become stagnated in the meridians [5].

Le14 is a Mu-point of the liver meridian. During acupuncture of Le14 the “Qi” is activated in the liver. Thereby “moisture” is eliminated in this area, the congested Qi is reduced and the liver-Qi is distributed [2].

MP19 and Di14 are selected as important local points to prevent pain in the posterior shoulder area and in the lower liver area. As main points (local points) of pain and a feeling of repletion in the chest area and the upper axilla, Le14 and MP19 are punctured according to the pure Xie-method, first by “tiger head shaking”¹ (specific method for eliminating the “old blood”) or in combination with B117 (blood mouth point) so that the long remaining and old “blood” and the “coldness” (fullness type) are reduced and possibly eliminated. After that, a Bu-method with low intensity is effected. In this way, the Jing-Qi is intensified and “the coldness” vaporizes. For this purpose B117 (mouth point of the “blood”) is punctured as an additional point according to the Bu-method to activate the blood in the entire body. This acupuncture technique should be particularly applied to patients with dark discolouration of the operation field [1].

Depending on problems additional points should still be punctured. Therefore a stronger manipulation of the needle at Di14 or an additional puncture of PC2 can be effected, if the patient complains of an ache on the inside of the arm. Dū9 and Dū11, as local points or several Ashi-points, are additionally punctured in patients with pain or an ache in the area of M. latissimus. Other additional points are punctured: Lu2 at radiation of pain to the chest, Lu3 at radiation to the inside of the arm and Di10 at radiation to the posterior side. Di15 and Di16 are punctured if the patient complains of tension in the shoulder area. The patient’s general state of health before, during and after the operation is also considered. In this way, either He7, Re6 (Qi) or Re17 (Qi-mouth point) are punctured according to the Bu-method [4].

Other important points are of great importance for the effectiveness of the acupuncture. The acupuncturist himself should have a de-Qi-feeling (like a “fish on a hook”). If acupuncture is effective, the patient often has a feeling of coldness or radiation to the fingers or the chest and a feeling of heaviness after treatment. The

needles used to prick according to the Xie-method are activated every 5 minutes. During the treatment the patient should be in a comfortable position (deep relaxation) and remain lying up to 1-2 minutes after treatment.

Acupuncture seems to be an effective treatment to relieve pain and to improve arm movement (abduction angle) in the area of the axilla and operation field in patients with ablation and axillary lymphadenectomy. By acupuncture the Jing-Luo-system is activated in the corresponding area. The "old blood" is eliminated and the invasion of the "moisture, coldness" is obstructed: the Jing-Luo-system is uncovered and constructed again. Side-effects were not observed in the present study.

Conclusion

Acupuncture seems to be an effective treatment to relieve pain and to improve arm movement after ablation and axillary lymphadenectomy. Owing to early acupuncture with activation uncovering of the "Jing-Luo-system" pain in patients with mammary cancer can be reduced postoperatively, and restricted arm movement can be improved. The treatment is effected according to the "Xie-technique" at the main points. The patient's feeling

is extremely important. The combination of the different main points and the correct selection of additional acupuncture points regarding the basic condition of the patients before and after the operation are very important for a successful application of acupuncture.

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GRANADA 99

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Panel discussion 5: "Women's health care"

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