1. **Practice of acupuncture-moxibustion treatment**

Acupuncture-moxibustion comprises medical science based on unique theory considering the human body as an organic body grounded on meridians and meridian points. The diagnoses and therapeutic methods described in the world’s oldest books of medicine, “Huang di nei jing su wen” and “Huang di nei jing ling shu,” are used in clinical practice even now. In acupuncture-moxibustion treatment, it is important to establish the pattern of the patient’s complaint, to understand the patient’s predisposition and clinical condition, and to prescribe and locate the points (selection of meridians and meridian points), based on main indication of meridians and meridian points. The task of acupuncture-moxibustion treatment is to select a few meridian points, insert a needle, and give appropriate stimulus at the appropriate depth to obtain the maximum effect. It is necessary to understand the main indication of the meridians and meridian points adequately and to introduce acupuncture-moxibustion treatment as a continuum that does not only have experimental aspects, but that is also based on reported evidence.

1) **Oshide**

*Oshide* is commonly performed by holding a needle and a needle tube with the left hand during needle insertion and to ensure stability during needle insertion. It consists of an action of pinching a needle tube and a needle with the thumb and index finger. It includes bilateral pressure (strength of pinching the needle), top and bottom pressure (pressure applied at the needle insertion site), and ambient pressure (pressure to fix the entire needle insertion site). Oshide is an important technique to alleviate pain on insertion, prevent flexion of the needle when a patient suddenly moves, and provide a sense of safety to the patient while obtaining biological information from the patient’s skin during needle insertion.

2) **Method of needle insertion**

2-1) Needle tube insertion method: The method most widely used this time.

A needle is placed in a tube that is slightly shorter than the needle, and the needle is inserted by patting the handle part which is slightly visible.

2-2) Twisting needle insertion method: The needle tip is in contact with the skin while applying pressure to the skin with *oshide*, and the needle is twisted and inserted with the fingers that hold the needle. It is frequently used to insert Chinese needles.

2-3) Rotational and twisting needle insertion method: The needle is inserted while caracoling the needle to the right and left.

2-4) Needle feeding insertion method: The needle is pinched with the thumb and index finger of the needle-inserting hand and is inserted by a feeding action.

3) **Angle of needle insertion**

Straight, oblique and transverse methods of insertion are used. Generally, straight insertion, whereby the needle is inserted perpendicularly to the skin surface, is commonly used, but in the intercostal region or the scalp, transverse insertion that is almost parallel to the skin is
4) Techniques during needle insertion

4-1) Sparrow-pecking needle technique (jakutaku jutsu): During needle insertion or after inserting a needle to a certain depth, the needle is advanced and retreated up and down like when a sparrow picks up feed.

4-2) Rotational and twisting technique (sennen jutsu): During insertion or removal of a needle, the needle is alternately caracoled to the right and the left.

4-3) In-situ technique (chishin jutsu): The needle is inserted in the body and left as it is for a while.

4-4) Simple insertion technique (tanshi jutsu): The needle is withdrawn immediately after insertion to the target depth.

4-5) Moreover, intermittent stimulation technique (kanketsu jutsu), vibrating needle technique, a technique of pausing between the stages of insertion and withdrawal of the needle (okuroojutsu), a technique of rotating needle (kaisenjutsu), etc. are used.

5) Number of needle insertions

The number of needle insertions is not directly proportional to the therapeutic effect. It is important to understand the symptoms and signs, locate the point correctly, and give appropriate stimulus. The number of needle insertions during treatment differs according to the patient’s clinical condition and the type of asthenia or fullness. The number of needle insertions should be adjusted considering the patient’s age, body build/predisposition, habituation to treatment, and clinical conditions.

2. Composition of treatment

1) Combination of points

Combination of points means to select the meridian points that are effective for the patient’s clinical condition among the many meridian points in the whole body (selection of points), that is, to determine the treatment policy. The basis of selection and combination of points means to have an overall knowledge of the main indication of meridians and meridian points, and to select the meridians and meridian points based on the symptoms and signs. It is also important to locate the meridian points correctly. Locating a meridian point is referred to as shuketsu (locating a point), but when defining the site of the meridian point, the place of the meridian point differs depending on the body size. Bone proportional cun, in which the length of a certain site of the body is set at a certain specified size, and acupuncture-inch method of measurement, in which the width and length of fingers are considered as the measuring basis, are used. In reference to the defined site of the meridian point, the surrounding area is massaged to search the site of pain, numbness or lassitude and the site of a sensation of depression or elevation of the skin, and then the meridian point is located.
As a combination of points, local point selection, whereby the meridian point near the symptomatic site is selected, neighborhood point selection, whereby the meridian point slightly away from the affected part is selected, one-sided point selection, whereby the meridian point on the affected side with clinical pathology or on the healthy side without clinical pathology is selected, generally performed two-sided point selection, and remote point selection, whereby a site away from that with clinical pathology is selected are used. These methods comprise point selection methods following the theory of meridians and meridian points according to the patient’s complaint. Point selection taking the origin and termination of nerves and muscles based on modern medicine into consideration, is also conducted.

There are extremely many meridian points in the whole body. All meridian points at all sites have therapeutic effects on disease symptoms at the site, and meridian points are also considered to have therapeutic effects on the pattern of diseases on the concerned meridian. For treatment, local location of a point, proximal location of a point, remote location of a point, location of a point depending on the course of the meridian, and location of a point on a different meridian taking the mother-son relationship of the 5 elements into consideration, and the creative cycle-checking cycle relationship are frequently used, but the source point using specific point, connecting point, back-shu point, front-mu points, and eight meeting points combination method, symptomatic combination of points, and combination of points in contact with the meridian, are used, and treatment is generally conducted by combining them.

When classifying the Yin and Yang organs according to the five element theory, the Yin organs are the liver, heart, spleen, lung and kidneys, and the Yang organs are the bladder, small intestines, stomach, large intestines and urinary bladder according to wood, fire, earth, metal and water. The respective organs are continuously associated by the creative cycle.
relationship and the checking cycle relationship.

For example, the liver produces heart, the relationship in a clockwise direction is referred to as the creative cycle, and like the liver defeats the lung, the relationship toward the arrow in the circle is referred to as a checking cycle relationship.

In addition, Yin organs and Yang organs are interrelated closely. The relation of the liver and the gallbladder is just like a two sides of a coin.

### 表1 要穴表（五行穴）

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2) Mother-son combination of points

The combination of points to perform tonification and reduction by using the creative cycle and checking cycle relationship of five elements and the attributes of the five transport points (Figures 1 and 2, and Table 1).

There is a method to evaluate the meridian to which the diseased organs and site belong and to perform treatment according to the tonification and reduction method of “difficult passages of the Nei ching classic of medicine and 69 difficulties.”

2-1) Tonification and reduction method of “difficult passages of the Nei ching classic of medicine and 69 difficulties”

“Mother and son in 69 difficulties” means the mother and son in the creative cycle relationship. In this mother-son relationship, two cases are considered possible. One is (i) treatment using the problematic meridian itself, and the other is (ii) treatment using the other meridian. There are cases of asthenia and of fullness, and the meridian points used for treatment are different.

2-1-1) How to select the therapeutic meridian point in a case of asthenia

Considering a case of liver-asthenia, based on the principle of “tonify the mother in case of asthenia,” firstly, a water point (Gosuiketsu: Inkoku), a mother meridian point on the liver meridian (wood, self-meridian), should be selected, and next, since the mother meridian considered from the liver meridian (wood) is the renal meridian (water), a water point (Gosuiketsu: Kyokusen) on the renal meridian should be selected and used for treatment (tonify). That is, the treatment points should be selected from the self-meridian and the other meridian and tonified.

1) From the self-meridian (liver meridian is wood meridian): Kyokusen, a water point (Gosuiketsu), a mother point on the self-meridian, should be tonified.

2) Inkoku, a water point (Gosuiketsu), a self-point (the meridian point that has the characteristics of the element to which the meridian belongs) of the mother meridian (renal meridian of water meridian), the other meridian, should be tonified.

2-1-2) How to select the therapeutic meridian point in a case of fullness

In a case of fullness in the lung meridian (gold meridian), for example, follow the principle, “reduce the son in case of fullness,”

1) From the self-meridian (the lung meridian is the gold meridian): Shakutaku, a water point (Gosuiketsu), a son point of the self-meridian, should be reduced.

2) Inkoku, a water point (Gosuiketsu), a self-point (the meridian point that has the characteristics of the element to which the meridian belongs) of the son meridian (the renal meridian of water meridian), the other meridian, should be reduced.

In case of considering the tonifying and reducing point only by this 1) self-meridian only is the therapeutic point of the excitation/inhibition point of the ryodoraku treatment, and the
determination of therapeutic meridian point considering the self and other meridians in 1) and 2) is a meridian test.

As the other tonifying methods and reducing methods, there are many methods, including tonification and reduction of respiration, tonification and reduction in accordance with or against the believed flow of Qi in the meridian along or against the direction of the meridian, slow tonification and reduction of disease, torsion tonification and reduction, tonification and reduction of nutrients and defenses. Tonification and reduction are the important factors to introduce an effect in acupuncture-moxibustion treatment together with the amount of stimulus.

3) Hyochi hou (local symptomatic treatment) and Honchi hou (systemic meridian treatment)

The therapeutic methods are roughly divided into two therapeutic methods. One is referred to as Hyochi hou, a symptomatic therapy for the diseased site, in which the treatment is performed using the meridian point related to the site. The other one is Honchi hou. This is a radical therapy in which the symptoms and signs (type of abnormal condition) are defined by the diagnostic method of oriental medicine (pulse diagnosis, palpation of the abdomen, palpation of the meridian point, etc.) and the treatment is performed from a fundamental aspect. It is performed to adjust the balance of the meridian coursing through the whole body comprehensively and to maintain the homeostasis to increase the natural healing force. Moreover, scalp acupuncture, hairline acupuncture, ear acupuncture, dorsal hand acupuncture, and tarsal acupuncture are also used. The response is searched taking into consideration that there is a meridian point in that part of the body, and it is used as the treatment point.

Cited and modified from Morimoto M Ed., Umeda T. Acupuncture-Moxibustion Treatment 252-256 and Pain Clinic and Oriental Medicine, Shinko Trading Company Ltd., Publication Department of Medical Books, 2004
常経（正経）・奇経 経間関係図

川本正純 教授より
Ryodoraku Representative Measuring Points

The Hand Channels

$H_1$—Flexor carpi radialis. (LU-9)

$H_2$—At the center of the medial wrist crease. (PC-7)

$H_3$—Radial aspect of flexor carpi ulnaris tencon. (HT-7)

$H_4$—At the junction of the ulna and carpl bone in the depression lateral to the tendon of m. extensor digitorum communis (SI-5)

$H_5$—Between the radius and the ulna, closer to the ulna. (TE-4)

$H_6$—On the radial side of the wrist. (HT-7)

( ): Represent WHO standard nomenclature.
Ryodoraku Representative Measuring Points

The Foot Channels

\( F_1 \)-Located on the medial side, proximal to the head of the first metatarsal. (SP-3)

\( F_2 \)-Located on the medial side of cuneiform bone, taken at the highest point of the dorsal surface of the foot (contact with the area is oblique). (LV-3)

\( F_3 \)-Located at the midpoint of a line drawn from the center of the medial condyle to the outermost tip of the heel. (KD-5)

\begin{align*}
\text{A} & \text{ Highest point of the first metatarsal} \\
\text{B} & \text{ Highest point of the medial malleolus}
\end{align*}

\( F_4 \)-Located lateral and proximal to the head of the 5th metatarsal (BL-65)

\( F_5 \)-Located at the junction of a line drawn from the lateral border of the 4th toe and a circle drawn around the ankle. (GB-40)

\begin{align*}
\text{C} & \text{ Highest point of the fifth metatarsal} \\
\text{D} & \text{ Highest point of the lateral malleolus} \\
\text{E} & \text{ Depression between the two tendons at the front of the ankle}
\end{align*}

\( F_6 \)-Located at the center of a line from the lateral border of the 2nd toe to the depression in the center of the ankle joint. (ST-42)
Selecting Tonification and Sedation Points

The process of selecting tonification and sedation points in the General Regulatory Treatment can be clearly shown by reference to a model chart.

① The left and right sides are significantly high, so the sedation point should be used for both.

② The right side is high and the left is inside the physiological range, but only marginally.
   If the sedation point is used for the right side only, a seesaw effect may occur.
   Therefore it is appropriate to use the sedation point for both.

③ The right side is significantly high, while the left side is comfortably within the band.
   The right side sedation point should be used.

④ The right side is slightly high and outside the band while the left is inside the physiological range.
   Treatment is only required for the right if the patient's presenting symptoms are related to this channel.
⑤ The sedation point should be used for the high right side, while the tonification point is indicated for the low left side.

⑥ Both sides are clearly within the physiological range so no treatment is necessary.

⑦ Both are significantly low, so the tonification point should be used for both.

⑧ The right side is low and the left is inside the physiological range, but only marginally.
   If the tonification point is used for the right side only, a see-saw effect may occur.
   Therefore it is appropriate to use the tonification point for both.

⑨ The right side is low and the left side is comfortably within the physiological range.
   Only the tonification point for the right side should be used.

⑩ The right side is slightly low and outside the band while the left is inside the physiological range.
   Treatment is only required for the right if the patient's presenting symptoms are related to this channel.

⑪ The sedation point should be used for the high right side, while the tonification point is indicated for the low left side.

⑫ Both sides are clearly within the physiological range so no treatment is necessary.

異常胃腸絡の判定基準
① 左右とも生理的範囲の外（上方）にある。この場合は左右とも「奮奮」とする。
② 右は生理的範囲外にあり、生理的範囲内にある方（左）の値が総平均値より大きく、左右の平均値が
   生理的範囲の外（上方）にある。左右とも「奮奮」。
③ 左は生理的範囲外にあり、生理的範囲内にある方（左）の値が総平均値より小さく、左右の平均値が
   生理的範囲の外（上方）にある。右のみ「奮奮」。
④ 右が少し生理的範囲の外にあるが、左右の平均値が生理的範囲の内にある。特に異常胃腸絡とする必要
   はないと、胃腸絡症候群表に該当する症状があれば右を「奮奮」として扱う場合もある。
⑤ 左右とも生理的範囲の下と上に出る。左を「抑制」、右を「奮奮」。
⑥ 左右とも生理的範囲の内にある。調整の必要はない。
⑦ 左右とも生理的範囲の外（下方）にある。左右とも「抑制」。
⑧ 左は生理的範囲外にあり、生理的範囲内にある方（左）の値が総平均値より小さく、左右の平均値が
   生理的範囲の外（下方）にある。左右とも「抑制」。
⑨ 左は生理的範囲外にあり、生理的範囲内にある方（左）の値が総平均値より大きく、左右の平均値が
   生理的範囲の外（下方）にある。右のみ「抑制」。
⑩ 右が少し生理的範囲の外にあるが、左右の平均値が生理的範囲の内にある。特に異常胃腸絡とする必要
   はないと、胃腸絡症候群表に該当する症状があれば「抑制」として扱う場合もある。
⑪ 左右とも生理的範囲外の下と上に出る。左を「抑制」、右を「奮奮」。
⑫ 左右とも生理的範囲の内にある。調整の必要ない。
M-TESTと経絡分布の関係（体幹と大腿部）

大腿（前面）右側

（内側）

（外側）

（後面）

前面の脾・胃の経絡を伸展負荷

側面の肝・胆の経絡を伸展負荷

後面の腎・膀胱の経絡を伸展負荷
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<tr>
<td>経:偏歷</td>
<td>経:公孫</td>
</tr>
</tbody>
</table>
M-TEST 治療ポイント早見表

心
小腸
（頸を前に曲げる。手を上にあげる）
心経または小腸経が疑われる。

膀胱 腎
（SLRのテスト姿勢または身体を前屈させる）
膀胱経・腎経が疑われる。

少衝【心】→ 大敦（行間）【肝】
神門【心】→ 太白（大都）【脾】
後渓【小腸】→ 臨泣（陽輔）【膀胱】
小海【小腸】→ 三里（解溪）【胃】
募: 巨闕
俞: 心俞
絡: 通里

至陰【膀胱】→ 商陽（二間）【大腸】
束骨【膀胱】→ 臨泣（俈渓）【胆】
後渓【腎】→ 經渠（尺沢）【肺】
涌泉【腎】→ 曲泉（大敦）【肝】
募: 中極
俞: 膀胱俞
絡: 飛揚
募: 京門
俞: 腎俞
絡: 大鍾
M-TEST 治療ポイント早見表

心包

（頭を横に曲げる（側屈）または腕を水平に回外、回外）
心包経または三焦経が疑われる。

中衝【心包】→ 大敦（行間）【肝】
大陵【心包】→ 太白（大都）【脾】

募：膻中
経：厥陰経
絡：内関

肝胆

（パトリックテストまたは身体の側屈）
肝経または胆絡が疑われる。

曲泉【肝】→ 陰谷（涌泉）【腎】
行間【肝】→ 労宮（中衝）【心包】

募：期門
経：肝経
絡：蠡溝

中渚【三焦】→ 臨泣（陽輔）【胆】
天井【三焦】→ 三里（解溪）【胃】

募：石門
経：三焦経
絡：外関

侠溪【胆】→ 通谷（束骨）【膀胱】
陽輔【胆】→ 支溝（中渚）【三焦】
陽谷（後溪）【小腸】

募：日月
経：胆経
絡：光明
<table>
<thead>
<tr>
<th>日本語</th>
<th>Romanji</th>
<th>English</th>
<th>Español</th>
<th>Português</th>
</tr>
</thead>
<tbody>
<tr>
<td>あしけついんかんけい</td>
<td>ashi ketsuin kan kei</td>
<td>(WHO) Liver meridian (LR)</td>
<td>meridiano del hígado</td>
<td>meridiano do fígado</td>
</tr>
<tr>
<td>あしこうきんはいけい</td>
<td>ashi kouin hokei</td>
<td>[WHO] Kidney Meridian (KI)</td>
<td>meridiano del riñón</td>
<td>meridiano do rim</td>
</tr>
<tr>
<td>あしあいがんけい</td>
<td>ashi aigai kei</td>
<td>[WHO] Gallbladder meridian (GB)</td>
<td>meridiano de la vesícula biliar</td>
<td>meridiano da vesícula biliar</td>
</tr>
<tr>
<td>あしおうたんけい</td>
<td>ashi outan kei</td>
<td>[WHO] Bladder meridian (BL)</td>
<td>meridiano de la vejiga</td>
<td>meridiano do bexiga</td>
</tr>
<tr>
<td>あしおういけい</td>
<td>ashi oui kei</td>
<td>[WHO] stomach meridian (ST)</td>
<td>meridiano del estómago</td>
<td>meridiano do estômago</td>
</tr>
<tr>
<td>あしひつわすい</td>
<td>ashi hitsu wasi</td>
<td>[WHO] Lung meridian (LU)</td>
<td>meridiano del pulmón</td>
<td>meridiano da pulmão</td>
</tr>
<tr>
<td>あしひつへいむけい</td>
<td>ashi hitsu heimu kei</td>
<td>Meridian of the Respiratory System</td>
<td>meridiano del sistema respiratorio</td>
<td>meridiano do sistema respiratório</td>
</tr>
<tr>
<td>あしじゅうあいけい</td>
<td>ashi juu ai kei</td>
<td>Meridian of the Heart</td>
<td>meridiano del corazón</td>
<td>meridiano do coração</td>
</tr>
<tr>
<td>あしずんけい</td>
<td>ashi zun kei</td>
<td>Meridian of the Small Intestine</td>
<td>meridiano del intestino delgado</td>
<td>meridiano do intestino delgado</td>
</tr>
<tr>
<td>あしじんけい</td>
<td>ashi jin kei</td>
<td>Meridian of the Large Intestine</td>
<td>meridiano del intestino grueso</td>
<td>meridiano do intestino grosso</td>
</tr>
<tr>
<td>あしだいけい</td>
<td>ashi dai kei</td>
<td>Meridian of the Stomach</td>
<td>meridiano del estómago</td>
<td>meridiano do estômago</td>
</tr>
<tr>
<td>あしぐけい</td>
<td>ashi ku kei</td>
<td>Meridian of the Spleen</td>
<td>meridiano del bazo</td>
<td>meridiano do baço</td>
</tr>
<tr>
<td>あしぐうけい</td>
<td>ashi u kei</td>
<td>Meridian of the Heart</td>
<td>meridiano del corazón</td>
<td>meridiano do coração</td>
</tr>
<tr>
<td>あしこうけい</td>
<td>ashi kou kei</td>
<td>Meridian of the Large Intestine</td>
<td>meridiano del intestino grueso</td>
<td>meridiano do intestino grosso</td>
</tr>
<tr>
<td>あしけすけい</td>
<td>ashi kessei kei</td>
<td>Meridian of the Bladder</td>
<td>meridiano de la vejiga</td>
<td>meridiano da bexiga</td>
</tr>
</tbody>
</table>

**注：**
- **WHO:** World Health Organization (Organización Mundial de la Salud)
- **ST:** Stomach meridian (meridiano del estómago)
- **GB:** Gallbladder meridian (meridiano de la vesícula biliar)
- **BL:** Bladder meridian (meridiano de la vejiga)
- **LU:** Lung meridian (meridiano del pulmón)
- **KI:** Kidney Meridian (meridiano del riñón)
- **LR:** Liver meridian (meridiano del hígado)
- **ST:** Stomach meridian (meridiano del estómago)
- **LU:** Lung meridian (meridiano del pulmón)

**翻訳：**
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**註：**
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- **KI:** Meridiano del riñón
- **LR:** Meridiano del hígado
katamono dooshi inserting needle into Chinese of Japanese-chess boards made of hard thick wood

Un tipo que presiona el tiempo

katamono dooshi inserting needle into Chinese of Japanese-chess boards made of hard thick wood

Un tipo que presiona el tiempo
Symptomatic treatment/branch treatment

Exterior-interior point

Combination of exterior-interior points, combining Yang channel points with exterior-interior points.

Organ selection

Selection of related points, based on the exterior-interior relationship of the twelve Yin and Yang meridians.

E.g. to select Zusanli (St36) and Gongsun (Sp 4) for the treatment of stomach diseases; select Hegu (LI 4) and Yuj (Lu 10) for sore throat, etc.

The combined selection of the Yuan (primary) point and Luo (connecting) point recorded in ancient works belongs to this method.

Combination of exterior-interior points, combining Yang channel points with exterior-interior points.

Method of selection of related points, based on the exterior-interior relationship of the twelve Yin and Yang meridians.

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ろっき 六気 rokki* seis factores exógenos
ろっけいべんしょう 六経弁証 rokkei benshou seis fatores exógenos
へんけいせいかんせつ kansetsu seikakisen hennkeisei seis factores exógenos

変形性関節症 kansetsuyo osteoarthritis artrosis
関節症 kansetsuyo arthritis artritis
理学療法士 rigakuryouhoushi physical therapist terapeuta fisico
筋肉itis nousuyuketsu intracerebral hemorrhage hemorragia intracerebral
診断 sindan diagnosis apoplejia cerebral
terapia fisico

じりつしんけい 自律神経 jiritsu sinkei SNA SNA

えし 壊死 esi necrosis necrosis

りょうないしょう 緑内障 ryokukaiyosei glaucoma glaucoma

まっしょうしんけい 末梢神経 matsuhyou sinkei SN periférico SN periférico

おうどうしんけい 運動神経 oudou sinkei motor nerve nervio motor

えし 壊死 esi necrosis necrosis

べんしょう 六経弁証 ben쇼う 六経弁証 seis fatores exógenos

いきてんしょう 六経弁証 itetsutenshoushou seis fatores exógenos

しんのう shinku muscular fatigue fatiga muscular
A literature review and prevention of adverse events in acupuncture practice

Umeda T and Morimoto M
1) Department of Acupuncture and Moxibustion, Kansai University of Health Science
2) Department of Anesthesiology, Kinki University Faculty of Medicine

Summary
Acupuncture treatment is considered a relatively safe therapeutic method. However, not a few adverse events of acupuncture treatment have occurred. These adverse events are commonly of low risk. Pneumothorax, broken needle, exacerbation of symptoms, nerve injury or paralysis, infection and subcutaneous bleeding have been reported in the search of the medical error reports and papers. In this paper, the summary of pneumothorax, broken needle, dropout of needle, bleeding, internal bleeding and infections, the adverse events considered high-risk among them, and the safety measures are described.

Keywords: Acupuncture treatment, adverse event, risk management

Introduction
Acupuncture and moxibustion treatment is a therapeutic method having old history, and it was considered that there are fewer adverse reactions than Western medicine. However, not few adverse events have occurred by acupuncture treatment. These adverse events are defined as “the undesirable medical events that occurred during or after treatment irrespective of causal relationship,” which are classified into the adverse reactions occurring mainly as the patient’s reaction, the medical errors occurring due to practitioner’s mistake and the accidents due to inevitable force.1)

In this paper, we describe the adverse events mainly considered high risk and the safety measures therefor.

1. General adverse events and the incidence thereof
The low-risk adverse event may occur despite repeated cautions. The incidence of adverse event varies according to the factors on the caregiver side (needle insertion technique, amount of stimulus, therapeutic method, etc.) and the factors on the patient side (presence or absence of the experience of acupuncture treatment, body constitution, physical condition, etc.).

As concerns the incidence of adverse event of acupuncture treatment, Yamashita et al.2) performed a prospective study and reported that the incidence of adverse event in a total of about 55,000 patients was 0.12%. In the U.K., moreover, a similar study has been performed, and it was reported that the incidence of adverse event was 0.14% by the acupuncture and moxibustion in modern medicine and 0.13% by the acupuncture and moxibustion in Chinese medicine.3,4) From the above, it is considered that serious adverse event occurs rarely by standard acupuncture treatment irrespective of traditional group. Moreover, Yamashita et al.5) reported the result of investigation of adverse events in a total of 391 patients, 1,441 treatments and 30,338 needles used for treatment. As a result, there was no injury due to high-risk error, but systemic adverse reactions (tiredness, malaise, sleepiness, exacerbation of main complaint, itching at needle insertion site, vertigo, dizziness, bad mood, nausea, headache, etc.) and local adverse reactions (a small amount of bleeding, pain at needle insertion, pain at needle insertion site after treatment, subcutaneous bleeding, subcutaneous hematoma, etc.) were observed. The former were observed commonly on the day and next day of treatment, which frequently disappear gradually (Table 1).
### Table 1. General adverse events of acupuncture (systemic adverse events and local adverse events) (cited and modified from references 2 and 5)

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Proportion of patients showing adverse events* (number of patients showing adverse events / number of patients who underwent acupuncture)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tiredness / malaise</td>
<td>8.2% (32/391)</td>
<td>Most frequent at initial treatment</td>
</tr>
<tr>
<td>Sleepiness</td>
<td>2.8% (11/391)</td>
<td>Most frequent at initial treatment</td>
</tr>
<tr>
<td>Exacerbation of main complaint</td>
<td>2.8% (11/391)</td>
<td>Sciatic neuralgia, neck-shoulder pain, low back pain, tinnitus, etc.</td>
</tr>
<tr>
<td>Itching at needle insertion</td>
<td>1.0% (4/391)</td>
<td></td>
</tr>
<tr>
<td>Vertigo / dizziness</td>
<td>0.8% (3/391)</td>
<td>Likely to occur by needle insertion in the standing position</td>
</tr>
<tr>
<td>Bad mood / nausea</td>
<td>0.8% (3/391)</td>
<td></td>
</tr>
<tr>
<td>Headache</td>
<td>0.5% (2/391)</td>
<td></td>
</tr>
<tr>
<td>Systemic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incidence of adverse event by needle insertion** (number of needle insertions causing adverse event / total number of needle insertions)</td>
<td>Remarks</td>
<td></td>
</tr>
<tr>
<td>Small amount of bleeding</td>
<td>2.6% (781/30,338)</td>
<td>Less than 1 drop of bleeding in 86% of the patients showing bleeding and 2 drops or more of bleeding in 1%</td>
</tr>
<tr>
<td>Pain at needle insertion</td>
<td>0.7% (219/30,338)</td>
<td>Bleeding stopped within 5 minutes in all patients</td>
</tr>
<tr>
<td>Subcutaneous bleeding</td>
<td>0.3% (100/30,338)</td>
<td>Disappeared immediately after removal of needle in 81% and remained for a while in 7%</td>
</tr>
<tr>
<td>Pain at needle insertion after acupuncture</td>
<td>0.1% (38/30,338)</td>
<td>Less than 20 mm in diameter in 68% and 20 to 30 mm in 8%</td>
</tr>
<tr>
<td>Subcutaneous bleeding</td>
<td>0.1% (38/30,338)</td>
<td>Less than 10 mm in diameter and painless in 74% and 10 to 20 mm in 13%. Painful in 6% of all hematomas</td>
</tr>
<tr>
<td>Local</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incidence of adverse event</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most frequent at initial treatment</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
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<tr>
<td>Sciatic neuralgia, neck-shoulder pain, low back pain, tinnitus, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likely to occur by needle insertion in the standing position</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*: Rough standard of how many patients show adverse events occur when 100 different patients underwent the treatment

**: Rough standard of how many adverse events occur when needle insertion was performed 100 times

### 2. High-risk adverse events and the incidence thereof

The high-risk adverse events include the cases with severe injury requiring a certain treatment at medical institution and the cases of medical error covered by liability insurance, etc.

Fujiwara analyzed the case examples covered by liability insurance from 1978 to 2002 and reported that there were a total of 814 medical error cases. Among them, 377 cases were the medical errors due to acupuncture treatment, including pneumothorax (130 cases, 34%), broken needle (115 cases, 30%), exacerbation of symptoms (61 cases, 16%), nerve injury and paralysis (25 cases, 7%), infection/purulence (25 cases, 7%), subcutaneous bleeding (18 cases, 5%), etc. It is impossible to analyze by what times of needle insertion and in what number of patients adverse events occurred, but calculating the incidence from the number of subscribers of liability insurance and the number of acceptances, the annual incidence per acceptance was about 0.6%, indicating the necessity of risk management.

The number of malpractices covered by liability insurance in 2003 or later has not been published, but it is inferred that, because the needle was changed to silver needle to stainless steel needle from Showa era to Heisei era and insertion became easier than before, the number of onsets of pneumothorax is increasing.

The Safety Committee, Research Department, the Japan Society of Acupuncture and Moxibustion analyzed the literatures concerning the safety of acupuncture and moxibustion published in Japan from 1981 to 2006 by dividing into phase 1 (1981 to 1997), phase 2 (1998 to 2002) and phase 3 (2003 to 2006). As a result, in the phase 1, there were 149 literatures (63.9%) concerning the therapeutic malpractice and accident of acupuncture, including 68 literatures (29.2%) concerning broken needle, 42 literatures (18.0%) concerning infections, 18 literatures (7.7%) concerning pneumothorax, 16
literatures concerning other therapeutic
malpractice and 15 literatures concerning
education and enlightenment. In the phase 2, 8 there were 36 literatures, including 13 literatures
(36%) concerning infections, 6 literatures
(16.6%) concerning organ injury such as
pneumothorax and foreign matters, 11 literatures
(30.6%) concerning skin diseases such as argyria
and metal allergy, 5 literatures (13.9%)
concerning neuropathy and bleeding/hematoma
due to broken needle and buried needle (13.9%)
and 1 literature concerning mislaid needle, and
in the phase 3, 9 there were 44 literatures,
including 7 literatures (15.9%) concerning
infections, 7 literatures (15.9%) concerning
organ injury such as pneumothorax and foreign
matters, 7 literatures (15.9%) concerning broken
needle, 2 literatures (4.6%) concerning dropped
out needle, 4 literatures (9.1%) concerning
migrating needle, 2 literatures (4.6%)
concerning buried needle, 5 literatures (11.4%)
concerning neuropathy and 3 literatures (11.4%)
concerning skin disorders such as argyria, and
consciousness impairment, bronchial asthmatic
attack and metal allergy were reported. Since it
is considered that relatively rare cases and
serious cases may be adopted as the case reports
listed in academic journals, it is impossible to
estimate the quantitative change in occurrence of
adverse event of acupuncture by these literature
survey only. In this analysis, however, it can be
understood that infection, pneumothorax, broken
needle and neuropathy do not decrease.

3. High-risk adverse events and safety
measures therefor

The problematic high-risk adverse events are
malpractices due to the error of practitioner, that
is, those occurring because practitioner failed to
perform one’s duties. In the analysis in literature
survey, pneumothorax, broken needle, buried
needle, neuropathy, purulence or infection,
internal bleeding and exacerbation of symptom
were observed frequently, and the event most
frequently reported as malpractice in liability
insurance was pneumothorax. These high-risk
adverse events (including malpractice) are
described below.

1) Pneumothorax

When a needle is inserted into the thorax or the
dorsal region of shoulder, deep insertion injures
the pleura and lung, and chest pain, cough,
dyspnea, uncomfortable feeling, etc. appear.
Pneumothorax due to this acupuncture treatment
occurs more frequently in females.

Onset of symptom is not immediately after
treatment in a lot of cases, which is observed on
the next day and after 2 or 3 days. The patients
who should be taken care are those of thin, small
build and weak type (flat chest), those with
chronic respiratory disease such as emphysema
and those who have shown spontaneous
pneumothorax in the past.

The site where the needle may reach the lung
and pleura directly is the back, anterior chest,
side chest, dorsal region of shoulder, and
supraclavicular fossa, etc. In the needle insertion
at the site such as upper part of shoulder,
tercapular region and lower shoulder blade,
particularly, care should be taken to the depth
and direction of insertion. Cho et al. performed
measurement from the body surface of lower back to lung in 51 bodies (21 males and
30 females) and reported that there is a bilateral
difference at 膈関 Kakuyu BL17, 脾俞 Suiyu
and 肝俞 Kanyu BL18 in males and 肺俞 Tokuyu BL16 and 脈俞 Kakuyu BL17 in
females and that the distance from body surface
to lung is shorter on the left side in both males
and females (Figure 1). In the interscapular
region and back region, in particular, care is
required for insertion of needle to the meridian
points on the second bladder meridian line such
as 膈関 Katsukan BL46, 魚門 Kommon BL47, 腸経 Yoko BL48 and 意舎 Isha BL49.
The safe insertion depth in the dorsal region of
shoulder is different according to the patient’s
dominant hand, but generally, the distance to
lung is shorter in females than in males and
shorter on the left side than on the right side. On
the back side, the needle should be inserted to
the meridian points above 脾俞 Hiyu BL20, 胃俞 Iyu BL21, 意舎 Isha BL49 and 胃倉 Isou
BL50 recognizing that the lung and pleura may
be injured. The safe insertion depth on the
anterior and lateral surfaces of chest is shorter
than that on the back side, which is mostly 10 to
20 mm and has no bilateral difference. In the
“Guidelines for safety of acupuncture and
moxibustion,” the insertion depth at 肩井 Kensei GB21 is set at up to 20 mm except for
the patient of extremely thin build and up to 19
mm for 膈盲 Koko BL43.
As the safe needle insertion method, the trapezius muscle needle insertion method (oshiide pinching insertion) is recommended for needle insertion in the upper part of shoulder (Figure 2). The trapezius muscle needle insertion method is the one in which the fiber in the upper part of trapezius muscle is pinched with oshiide and the needle is inserted by tilting the needle tube slightly and directing upward. It is recommended to perform transverse insertion or oblique insertion medially and inferiorly from the interscapular region to subscapular region and along the rib in the chest and precordial region, and avoidance of strong stimulus is also an important point for prevention of pneumothorax.

Even if the needle is inserted to the chest and the dorsal part of shoulder and it is considered that the needle has not reached the lung field directly, pneumothorax occurs, but it may be impossible to differentiate whether it is the spontaneous one or that induced by a certain stimulus due to needle insertion.\cite{17,18}

When needle insertion is conducted from the dorsal part of shoulder to lumbar region, the needle is inserted by transverse or oblique insertion by directing the needle tip inward in the internal and external direction of spine and caudally in the cranial region and caudal region. It is important to take the exact direction of insertion and the needle insertion distance, coarse needle handling should not be conducted, and strong stimulation should be avoided if possible. If in-situ technique and low-frequency electric acupuncture are conducted, moreover, towel, etc. should not be placed on the needle, and it is important to take care so that the weight of alligator clip and cord may not be applied vertically.
Figure 2.  Trapezius muscle needle insertion method (pinching oshide)
Pinch the fiber in the upper part of trapezius muscle with the thumb, index finger and middle finger of oshide and insert the needle toward the tip of middle finger of oshide.

As concerns the occurrence of pneumothorax at lung biopsy, there is a report studying the thickness of needle and the incidence of pneumothorax. According to it, the incidence of pneumothorax was 37% with the needle of 1.20 mm in outer diameter but 8% or less with the needle of 0.51 to 0.56 mm, and the pneumothorax requiring deaeration was observed in 4% or less. Currently, the diameter of needle used in acupuncture treatment is about 0.20 mm, and it is inferred that the incidence of pneumothorax may be considerably low.

In recent years, pneumothorax of both lungs has been reported in 23 patients so far, among which 3 patients died. In the patient who underwent legal autopsy, the pneumothorax was concluded to be attributable to deep insertion of needle, but since this case occurred due to lack of recognition about the distance from body surface to lung, inexperience of technique and inappropriate action at low-frequency energization of needle, it can be said as an obvious malpractice.

2) Broken needle
Broken needle is sudden breakage of needle body during insertion. It is considered attributable to inappropriate selection of the material (gold, silver, stainless steel, etc.), thickness and length of needle, abnormalities of the needle itself, including flaw, corrosion, defect and wear, metallic composition of needle body and homogeneity of composition, decrease in strength, and corrosion of needle body due to low-frequency energization and direct current electric needle.

In the literature survey described previously, moreover, a lot of broken needles were reported. In this survey period, a lot of silver needles were used, the frequency of autoclaving for reuse increased, and it is considered that the strength of needle decreased due to wear and corrosion of needle body. As described before, the material of needle body became stainless steel in recent years, disposable needle became popular. In April 2005, the revised Pharmaceutical Affairs Law was enforced, and the present popular needle is the sterile “single-use filiform needle” specified in the Japanese Industrial Standards (JIS) T9301. Since the needle is classified into Class II of controlled medical devices and quality assurance has become higher, it is considered that broken needle will decrease in the future.
Figure 3. Photograph of broken needle

The upper needle is a normal needle of the same lot, and the lower needle is a broken needle (the needle on the left is the broken needle extracted by surgery). Broken needle occurred after inserting the 50-mm single-use filiform needle 30 to 40 mm to the neck and implementing low-frequency energization at 1 Hz for 15 minutes. The broken needle was extracted by surgery.

In the pain clinic field, low-frequency electric acupuncture is performed, but the manufacturer of needle considers that, since the single-use filiform needle is not for energization, broken needle due to energization will become the responsibility of practitioner. It is recommended to use the stainless steel needle of No. 20 (0.20 mm in diameter: No. 3 needle) or larger when low-frequency electric acupuncture is performed. However, there is no standard of safety at low-frequency electric acupuncture for the single-use filiform needle in the JIS standard, so the future examination is required.

For prevention of broken needle, inspection and check of the shale and flaw of needle are required, but since individual package is peeled immediately before use when the sterile single-use filiform needle is used, inspection and check of the shape of the needle placed in the needle tube have not been performed from the aspect of ensuring sterility.

In the author’s institution, an accident of broken needle occurred after low-frequency electric acupuncture in a patient who used a single-use filiform needle [thickness: No. 20 needle (0.20 mm in diameter), length: 50 mm] and a surgery was required. The tensile strength test and an analysis of metal composition using a transmission electron microscope were conducted, but the needle used had lower ductility (viscosity) and uneven crystal particles near the needle surface, which were considered to cause a decrease in ductility. From the above, the safety measure for broken needle is only the use of high-quality needle (Figure 3).

If the needle is broken, care should be taken so that the cut end may not enter further, and if a part of broken needle can be identified on the skin, it should be pulled out with Kocher clamp, etc. carefully. If the cut end of broken needle is present below the skin, it may appear if having the patient take the original position.

If a part of broken needle is left in the body, the cut end of needle may move in the body. If the buried needle (the needle has been cut and left in the body in the past, but it has not been performed this time) or the broken needle is left as it is (referred to as migrating needle), the needle body may move in the body, and as a result of nerve injury or biological reaction that occurred in the surrounding of needle body, abnormal sensation, pain, motor dysfunction, dysuria, etc. may occur.

Different from broken needle, however, as the patient’s reaction due to needle sensation and pain at insertion, the muscle fiber at needle insertion site contracts, the needle body does not
drop out suddenly, and it may become impossible to insert and remove the needle smoothly. When the needle is rotated at needle insertion, moreover, the muscle fiber may tangle with the needle body and it may become difficult to remove the needle. In such a case, the needle should be inserted while removing and inserting lightly, and if insertion is possible, the needle should be removed by rotating a little. If strong resistance is felt even if removing and inserting lightly and rotating, the action of penetration of epidermis and tapping should be repeated several times to dozens times rhythmically. If it is difficult to remove the needle even if doing so, a few needles should be placed in the surrounding of needle insertion site without trying to remove the needle forcibly, and muscle relaxation should be waited for a while.

3) Dropout of needle

Dropout of needle is that the junction between needle handle and needle body (fixation) is broken during insertion of needle into the body (Figure 4). Dropout of needle may occur because the needle body is pulled inside rapidly more than the inserted because of needle sensation, patient’s body motion and strong muscle contraction due to cough and sneezing and the force is applied to the needle root. If the depth of insertion increases in the lumbar and buttock and the posterior surface of femur, special attention should be paid. Using the needle of appropriate length, the needle should be inserted so that 1/3 of needle body may remain on the body surface at all times.

The treatment when the needle entered into the body should follow the procedures for broken needle.

4) Bleeding and internal bleeding

Bleeding and internal bleeding occur because the needle injures the blood vessel below the skin. If the number of needles to be inserted increases, and if the thick needle is inserted deeply, the occurrence of bleeding and internal bleeding will increase. The incidence of bleeding is reported as 1.6% on the average, but Yamashita et al. reported the incidence of bleeding and minor bleeding as 5.7%. In recent years, there are a lot of patients taking platelet aggregation inhibitor or anticoagulant drug for prevention of cerebral infarction and myocardial infarction, so care should be taken. It has been reported that the hematoma due to internal bleeding became large to the size of egg, and informed consent should be performed adequately for insertion of needle to the patients with a bleeding tendency carefully after acquiring understanding. Kasuya reported that iliopsoas muscle hematoma occurred in the patients with hemophilia A.

In the analysis by site, the frequency of bleeding is high in the head and face, and particularly, troubles occur frequently in the face because of cosmetic problem. In inserting the needle, it is necessary to explain the possibility of bleeding and internal bleeding and to acquire the consent about treatment. The face should be compressed slightly strongly by taking the time for a while after removal of needle.

5) Infection

Fujiwara reported that infection occurred in 25 of 377 patients (7%), but such reports have been
made frequently in overseas countries. In these reports, those with unclear causal relationship with acupuncture treatment are also included, but its possibility cannot be denied.

Infections are commonly observed in the compromised patients with diabetes mellitus, using corticosteroid drug, etc., which are commonly attributable to resident microbiota such as pseudomonas aeruginosa, staphylococcus aureus, streptococci. Moreover, 2 cases of toxic shock-like syndrome due to streptococcus group A were reported, one of which died.30)

Purulent omarthritis due to methicillin-resistant staphylococcus aureus (MRSA) attributable to needle insertion in the surrounding of shoulder joint has been reported.31) The patients undergoing acupuncture treatment frequently complain the joint symptoms in the shoulder joint and knee joint, and the needle is commonly inserted in the surrounding of joint.

For prevention of infection, it is needless to say that the standard preventive measures of the Centers for Disease Control and Prevention and the preventive measures by the route of infection should be performed and disinfection of needle insertion site and disinfection and sterilization of the devices to be used should be performed completely. In the “guidelines for basic education and safety” of World Health Organization (WHO),32) as the measures for infection in acupuncture and moxibustion, clean treatment environment, clean hand and fingers of practitioner, disinfection of needle insertion site, sterilization of needle and devices, aseptic procedures, disposal of needle and cotton swab, etc. are considered important. The aseptic procedure is called as the clean needle technique, and it is required to insert the needle so that the hands and fingers of practitioner may not touch the needle body at needle insertion. In order to reduce contamination of needle, moreover, it is recommended to wear the surgical glove and finger cot.

This time, the matter considered problematic hygienically in acupuncture treatment is oshide.33,34) Oshide is unique in Japan, which indicates the hand appended to fix the thin needle to be inserted at needle insertion, and oshide fixes the position of meridian points, relieves the pain at needle insertion and prevents flexion of needle. Moreover, it is a technique possible to understand the delicate body response due to insertion and handle the instant reaction such as patient’s body motion adequately. Infections have been prevented by wearing finger cot, gloves, etc., pinching the needle body with cotton swab, but the clean needle resolving these problems will be sold (Figure 5). This needle is of the structure equipped with a cylindrical sheath on the needle body, the sheath is slightly harder, and the needle body moves smoothly in the sheath. Since this clean needle holds the sheath part by oshide, it does not touch directly the needle body at insertion and removal of needle. This needle can be adopted in the clean needle technique, the global trend, and it is considered that the infection caused by oshide will decrease dramatically. Future popularization is expected.

**Figure 5. Clean needle**

The needle body is covered by sheath only in the part of oshide, which is of the structure not touching directly the needle body at needle insertion.

**Conclusion**

We introduced the adverse events and malpractices in acupuncture treatment and described the safety measures therefor. In the
acupuncture and moxibustion practice, the “Guide for prevention of infection in acupuncture and moxibustion treatment” was issued in 1993, its revision “Guidelines for safety of acupuncture and moxibustion” were issued in 2006, the “Manual for safety of acupuncture and moxibustion” covering the preventive measures for accident of acupuncture and moxibustion, handling methods of the case examples of accidents and the legal interpretation was issued in 2010, and the awareness of safety management has increased. There are not so many occurrences of high-risk adverse events in standard acupuncture treatment, but in order to prevent malpractice, it is considered necessary to acquire the evidence-based knowledge and technique, to raise the consciousness about safety at all times and to perform daily clinical practice.
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**Pneumothorax**

**Cause and pathological condition**

As a result of damaging the pleura and lung due to deep insertion when inserting the needle to the chest and dorsal shoulder, the air in the pulmonary alveoli leaks into the thoracic cavity, and the pulmonary lobe shrinks.

**Symptoms**

(i) The characteristics of pneumothorax are chest pain, cough and dyspnea, but the patient does not have a cough so much. The chest pain does not occur on the right and left sides, but uncomfortable feeling is observed at the center. The patient may not always have difficulty in breathing so much.

(ii) The patient may complain pain or uncomfortable feeling after 2 or 3 hours and in the next morning rather than immediately after treatment.

**Preventive measures**

<table>
<thead>
<tr>
<th>Patient likely to cause pneumothorax</th>
<th>Handling</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Frail patient with a small and thin figure and a flat chest</td>
<td>At insertion of needle, do not use thick needle. Do not perform sparrow pecking method, needle rotation technique, etc. vigorously (avoid strong stimulus).</td>
</tr>
<tr>
<td>(ii) Patient with chronic respiratory disorder such as emphysema</td>
<td></td>
</tr>
<tr>
<td>(iii) Patient who has had spontaneous pneumothorax</td>
<td></td>
</tr>
<tr>
<td>Treatment areas with concern</td>
<td>Handling (pay attention to the depth and direction of insertion of needle)</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Upper shoulder</td>
<td>Insert upward by the trapezius muscle needle insertion method (insert the needle by pinching the skin with the left hand (<em>oshide</em>)).</td>
</tr>
<tr>
<td></td>
<td><strong>Trapezius muscle needle insertion method</strong></td>
</tr>
<tr>
<td></td>
<td>In the prone position, transfer from the 7th cervical vertebra to the upper shoulder while pinching the muscle with the thumb and the middle finger of the left hand. Transfer the index finger to make the <em>oshide</em> (pinching <em>oshide</em>) while keeping the thumb and the middle finger.</td>
</tr>
<tr>
<td></td>
<td>While keeping the pinching <em>oshide</em>, penetrate the epidermis and insert the needle by directing the needle tube vertically to the bed or slightly toward the head (upward) and left the needle tip near the induration.</td>
</tr>
<tr>
<td>Interscapular and subscapular regions</td>
<td>Insert medially and inferiorly</td>
</tr>
<tr>
<td>Precordial and chest side regions</td>
<td>Transverse or oblique insertion along the rib</td>
</tr>
<tr>
<td></td>
<td>• At the low-frequency electric acupuncture therapy in the dorsal shoulder region, tuck an alligator clip (a smaller and light clip) into the needle body near the skin. Indicates the direction of insertion of needle in the interscapular region (first transport line of bladder meridian) and the connection with the cord at low-frequency electric acupuncture therapy (condition of alligator clip). Insert the needle medially and inferiorly by oblique to transverse insertion. Using a smaller and light alligator clip, tuck an alligator clip into the needle body near the skin. Do not place a towel on the needle.</td>
</tr>
<tr>
<td></td>
<td>• While placing the needle (including the time of low-frequency energization), do not place a towel, etc. on the needle.</td>
</tr>
<tr>
<td></td>
<td>• Check always whether or not the depth of insertion is safe.</td>
</tr>
<tr>
<td></td>
<td>• At insertion of needle onto the second transport line of bladder meridian in the interscapular and back regions, careful procedure is required.</td>
</tr>
<tr>
<td>Meridian points with concern</td>
<td>Safe insertion depth$^{1)}$ (see p.41)</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>肩井 Kensei GB21</td>
<td>Up to 20 mm for the patients other than those with a very thin figure</td>
</tr>
<tr>
<td>膈俞 Koko BL43</td>
<td>Up to 19 mm for the patients other than those with a very thin figure</td>
</tr>
<tr>
<td>腕中 Danchu CV17</td>
<td>Up to 10 mm considering the presence of sternal hiatus</td>
</tr>
<tr>
<td>Meridian points in the thorax</td>
<td>Minimum distance between the body surface and rib + half of the thickness of rib (5 mm)</td>
</tr>
</tbody>
</table>

**Measures to be taken at occurrence**

(i) If the causal relationship with acupuncture treatment is not understood but the possibility cannot be denied, handle the fact happening firstly in a sincere attitude.

(ii) Auscultate the bilateral difference in respiratory sound, vocal tremors and voice sound with an auscultator (see p. 121).

(iii) If chest pain and uncomfortable feeling in the chest persist, instruct the patient not to breathe largely and deeply so as not to become worse, accompany the patient on a visit to medical institution, explain the status and undergo the diagnosis by chest radiography, etc. If necessary, have the patient undergo degassing.

**Pulse oximeter as risk management**

As the risk management at acupuncture clinic, it is desirable to place a pulse oximeter. It can determine the blood oxygen saturation level and heart rate in a few seconds, and the presence of pneumothorax can be inferred.

The pulse oximeter is a device possible to determine and monitor the blood oxygen saturation level (SpO₂) and heart rate immediately at the same time only by inserting the fingertip into the sensor part.
Needle breakage (needle withdrawal)

Cause

(i) Use of the needle with abnormality / defect
(ii) Sudden body motion of patient, strong muscle spasm due to cough or sneezing, and inappropriate removal of needle such as crippled needle or bent needle

Preventive measures

(i) Avoid reuse of needle and use the single-use filiform needle.
(ii) For low-frequency electric acupuncture therapy, use the single-use stainless steel filiform needle of No. 3 (with 0.2 mm diameter) or larger in thickness.
(iii) Insert the needle so that more than 1/3 of needle body may always remain from the skin.
(iv) Needle breakage may occur when it is difficult to remove the needle. If it is difficult to remove the needle, remove the needle after muscular relaxation rather than remove it forcibly (see p. 32).

Measures to be taken at occurrence

(i) If the needle is broken, act in a calm and cool manner.
(ii) If the stump of broken needle can be identified on the skin, take care so that the stump may not get in any more, and pull out the needle with the device with firmly interlocked tip such as Kocher clamp and mosquito forceps.
(iii) If the stump exists under the skin, the stump of needle may appear by placing the patient in the original position.
(iv) If the stump of broken needle is not observed, put a mark on the insertion site, inform the patient that a part of needle exists in the body, instruct the patient to avoid body motion (the broken needle may transfer in the body), accompany the patient on a visit to the medical institution urgently and have the patient undergo appropriate treatment.

Scene showing that the broken needle is removed with a mosquito forceps (Kocher clamp).

Scene showing that the needle is removed with a mosquito forceps (Kocher clamp).
Good engagement of the point, strong grasp force, strong holding power
Buried needle

The buried needle is dangerous, and securement of safety is not sufficient. Transfer of needle, nerve injury, guts injury and exacerbation of symptoms have been reported. The broken needle is also dangerous, and it is frequently taken out by operation at the discretion of doctor.

Kocher clamp (mosquito forceps) is always kept for risk management.

Disposable (stainless steel) needles have become popular, and it is considered that the broken needle decreased, but assuming an emergency, Kocher clamp (mosquito forceps) should be prepared. It has better interlocking of tip than that of conventional tweezers and has strong grasp force and holding force. It is one of the devices that we want to keep in clinic.

Kocher clamp (mosquito forceps)
There are two types, bended tip and straight tip.

Internal bleeding

Cause

The needle tip injures capillary vessel, the blood flows out, hematoma is formed in the body, and the skin elevates.

Hemorrhagic macule (blue-purple bruise) occurs in the surrounding of needle insertion site, which becomes an appearance problem in the face and neck.

In the patients with anemia or bleeding diathesis, bleeding occurs easily, and hemostasis is difficult.
**Measures for prevention of internal bleeding**

<table>
<thead>
<tr>
<th>(i)</th>
<th>There are a lot of patients taking platelet aggregation inhibitor, anticoagulant, etc. (including the patients undergoing dialysis and for prevention of cerebral infarction and/or myocardial infarction). Obtain the information carefully about the drugs taken at the first medical examination in particular.</th>
<th>Drugs inhibiting blood coagulation: Warfarin®, Warfarin Potassium®, Bufferin®, Bayaspirin®, Panaldine®, Ticlopidine®, Cilostazol®, Epader®, Unplaque®, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ii)</td>
<td>Using a thin needle, insert the needle very carefully by reducing the number of needle insertions as much as possible.</td>
<td></td>
</tr>
<tr>
<td>(iii)</td>
<td>Explain that internal bleeding may occur due to insertion of needle particularly in the face and acquire the informed consent or acupuncture.</td>
<td></td>
</tr>
<tr>
<td>(iv)</td>
<td>If the needle cannot be inserted smoothly by patting at penetrating the epidermis and if resistance is felt and pain is complained, bleeding may occur frequently. Remove the needle immediately without inserting it forcibly, compress the insertion site and check the presence or absence of bleeding.</td>
<td></td>
</tr>
</tbody>
</table>

**Measures to be taken at occurrence**

| (i) | Take plenty of time for post-acupuncture massage after removal of needle and then push slightly strong. |
| (ii) | If petechial hemorrhage is observed at removal of needle, wait for spontaneous stop of bleeding. |
| (iii) | For the treatment of small bleeding, stop bleeding by pushing using a clean and dry cotton swab. |
| (iv) | Dispose the bloodstained cotton swab so as to keep away from patient’s eyes so that the patient may not experience anxiety. If hematoma is formed, compress with finger pads until disappearance of elevation, and even if the blue-purple color is not observed on the skin, attach a silver grain to the elevated part. Decoloration of blue-purple is considered rapid. |
| (v) | If hemorrhagic macule is produced because of internal bleeding, adhere a silver grain or stiletto needle (adhere several ones for large hemorrhagic macule). |

![Image of hemorrhagic macule](image_url)

Adhere a silver grain to the site with intense blue-purple color. Prevention of uncomfortable feeling and acceleration of deterioration of hemorrhagic macule can be expected.
**Explanation to patients**

(i) If subcutaneous bleeding is observed, explain to the patient adequately that the color will disappear gradually.

(ii) Even if elevation and hemorrhagic macele are observed due to internal bleeding in the dorsal shoulder and lumbar regions that cannot be seen by the patient oneself, explain it clearly so that the patient may not experience an anxiety.

(iii) There is an individual difference in assorption of subcutaneous bleeding, but it is considered to take 7 to 10 days for disappearance.

(iv) Even if there is only elevation and no blue-purple color on the skin, inform the possibility of appearance of blue-purple color. Handle the blood as the infectious matter and try to prevent infection between operator and patient.

**Difficulty in removal of needle (crippled needle)**

**Cause**

Due to needle sensation, pain at insertion and patient’s body motion, the muscle fiber at the insertion site goes into a spasm and tangles in the needle body, and it becomes impossible to remove the needle suddenly.

It occurs due to excessive rotation, rotation to one direction and rude procedure.

Due to reflexive muscle contraction, the muscle fiber contracts, and the needle bends. When the muscle fiber tangles during Sen-nen technique, moreover, it may become difficult to remove the needle.

**Measures to be taken at occurrence**

In order to relax the hypertonic muscle, instruct the patient to get relaxed. Do not try to remove the needle forcibly despite of strong resistance, and try the following matters to remove the needle:

(i) If difficulty in removal of needle (crippled needle) occurred in rotation in one direction, rotate the needle in the opposite direction.

(ii) Put the needle tube over the needle and perform the index finger hammering insertion by patting the upper part of needle tube like loading bullets or the needle guide tube stimulation technique by patting the needle tube only without using the needle.

(iii) Perform the auxiliary stimulation technique patting the skin in the surrounding of needle insertion site with the needle tube or fingertip.

(iv) Perform the counter acupuncture near the needle insertion site and wait for muscle relaxation by taking a little time. If the needle cannot be removed by these techniques, bend of needle body and strong tangling of muscle fiber are considered possible.
Bend of needle body and tangle of muscle fiber due to twisting will occur. If they occurred by rotation in one direction, rotate in the opposite direction. Moreover, perform the index finger hammering insertion and index needle guide tube stimulation technique. Coping techniques (i) and (ii) (explained on p.32)

(vi) While applying pressure to the skin with the left hand (oshide), remove the needle vertically by applying strong force.
(vii) After removal of needle, pain and uncomfortable feeling may remain frequently. Perform post-acupuncture massage sufficiently and conduct the skin permeating needle insertion (figure below).

Skin permeating needle insertion

Insert only the tip of needle horizontally to the epidermis and take up about 1 to 2 mm. Transfer the needle several times to a dozen times such as removing and inserting the needle 1 to 2 mm.

Explanation to patient

Explain to the patient that pain or uncomfortable feeling may remain a little at the site where it became difficult to remove the needle.

Forgotten removal of needle

Cause

Removal of needle is forgotten because the needle is hidden by clothes or the color of hair. It is presumed that the needle was removed, and the treatment is ended.
The number of needles used has not been checked.

**Preventive measures**

(i) In principle, the practitioner who inserted the needle should remove the needle.
(ii) Check and indicate the number of needles prepared and the number of needles inserted.
(iii) If the inserted needle is hidden by hair or clothes (including patient’s clothes) in the head or lumbosacral region, clip the inserted needle with a clip with a ribbon or a stationary film color flag for heading (photograph) to put a mark.
(iv) Be sure to check the number of inserted needles at changing the body position or the end of treatment. If possible, count the number of needles by 2 staffs.
(v) Check the number of needle tubes and needles. (Do not discard the needle tube until becoming consistent with the number of needles.)

Attach the colorful film flag for heading (index) to the needle head.

**Measures to be taken at occurrence**

Apologize and explain that pain or uncomfortable feeling may remain for a while. On the next day, make contact and check the subsequent condition. Correspond sincerely and keep the confidential relationship.

### Burn due to moxa needle

<table>
<thead>
<tr>
<th>Cause</th>
<th>Measures to be taken</th>
</tr>
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</table>
| Fall of moxa ball (Cough, sneezing or sudden body motion of patient. The operator touches the moxa. Treatment on other site) | • Explain the risk of burn to patient not to move the body as much as possible during the moxa needle therapy and not to endure when feeling hot.  
• Prepare wet cotton swab so as to respond to sudden fall of moxa ball.  
• Ask the patient about the heat sensation, and at the same time, be sure to check the radiation heat at the treated site by the hand of practitioner.  
• During the treatment, do not look away |
| The distance between moxa ball and skin is too close (the distance between the skin surface and moxa ball should not be made 2.5 cm or less.  
• Ignite the moxa ball on the needle tip in |
close range.
- Combine the moxa needle therapy and far-infrared therapy.
- The moxa needle slants, and the distance from skin surface becomes close.
- When sensation is slow in the elderly, etc.
- If adjustment of flame is not good when igniting moxa with a lighter, the flame may become large and reach the skin, clothes and needle body to induce burn.

from the patient, and if the patient complains the heat, cover the skin surface immediately with the thin wet cotton swab (cotton swab moistened with water) and keep out the heat.
- Adjust the angle of insertion of needle with a tape.
- When heat sensation is considered slow, avoid moxa needle.
- Do not perform ignition near the patient’s body surface but ignite at a distance and move the flame close to moxa gradually.

Measures to be taken at occurrence

(i) If burn occurred on the skin, cool it with cold water or refrigerant as soon as possible.
(ii) Wrap the refrigerant with a clean gauze and apply it to the affected area (prepare the refrigerants of several sizes).
(iii) If the burn is large, accompany the patient on a visit to a medical institution and have the patient undergo the treatment.
(iv) The practitioner should not apply ointment or drug, etc. to the affected area of burn (this action will become a treatment action).

**Burn due to the techniques other than moxa needle**

The adhesive force of the base of warm moxa (indirect moxibustion) to skin surface is weak, and the warm moxa may fall.

The tip of incense stick contacts directly with the skin and clothes to induce burn or burnt deposit of clothes.

If any metal is in the body, ultrahigh frequency wave (microwave) will produce heat after irradiation and induce burn.

Burn occurs with ultrasound waves or low-frequency wet hot electrode. Check the hot output adjustment dial before use.


Purulence / infection

Purulence due to moxibustion

Cause

In diathermic moxibustion, the blister at the scar of moxibustion may tear, bacteria may invade from there, and purulence may occur.

Preventive measures

(i) Disinfect the skin after moxibustion as well as before moxibustion.
(ii) In patients with decreased immunity (diabetes mellitus, use of steroid, elderly, etc.), do not perform moxibustion with a large moxa cone.
(iii) If the number of cone moxas is increased at the same site, perform moxibustion at the same position, if possible.
(iv) If home moxibustion is instructed, explain that multiple moxa cones should be conducted at the same meridian point so that the scar of moxibustion may not become large.

Measures to be taken at occurrence

(i) Take care so as not to abrade the scar of moxibustion.
(ii) Do not apply plaster or antimicrobial agent to the moxibustion site.

Infection due to acupuncture

Cause

Bacteria or virus invade through the needle insertion site and induce infection.

Preventive measures

(i) Use the sterile single-use filiform needle.
(ii) Perform hand washing and disinfection before acupuncture and disinfect the skin at the acupuncture site completely (see p. 21 of the standard preventive measures).
(iii) If hand washing is difficult after conducting foul procedure at treatment, disinfect the hands and fingers with rubbing-type disinfectant.
(iv) Wear fingerstalls and gloves to prevent infection.
(v) If medical devices (tweezers, plates, etc.) are reused, perform washing, disinfection and sterilization.
(vi) Wash, disinfect and sterilize the glass balls used in the cupping therapy.
(vii) In the patient's environment, use disposable products if possible, and make effort to maintain cleanliness.
(viii) Discard the cotton swabs used for bleeding and the used needles by placing them in a medical waste box.

**Measures for prevention of infection by the practitioner oneself**

(i) Undergo vaccination for hepatitis B virus.
(ii) If there is any wound on hands and fingers, it is essential to use liquic bandage or to wear fingerstalls and gloves. (See p. 24)

Make effort actively to prevent infection. (Universal precautions)

**Measures to be taken at occurrence**

The patient should undergo medical examination and appropriate treatment at medical institution.

**Infection**

The reports of the case of infection due to acupuncture are observed sporadically. As concerns hepatitis virus infection, the latent period is long, and it is difficult to conclude the presence or absence of the causal relationship between acupuncture and infection, but if virus adheres to the needle after removal, the possibility of infection cannot be denied if sterilization at reuse is incomplete. As concerns bacterial infection purulence and/or infection occur at the needle insertion site, and it is easy to conclude causal relationship.

Considering the elderly and the patients with decreased immunity, keep the cleanliness high in the whole clinic and make effort to prevent nosocomial infection.

**Needling accident**

**Cause**

- When the needles of different length are used for the treatment using the same plates, they enter the needle tubes of different sizes and bite the practitioner oneself at needle insertion.
- If the needle penetrates between scalp and hair at scalp acupuncture, it may bite fingers.
- When stowing the waste boxes for needles, the waste needle may bite fingers erroneously.
- When picking up the fallen needle, the needle may bite erroneously (including intradermal needle).

In the needling accidents, infection with hepatitis virus (type B: HBV, type C: HCV), and human immunodeficiency virus (HIV) may generally become problematic.
Preventive measures

(i) Check the needle tip (perceived notion due to habituation is a cause of mistake).
(ii) Use the single-use needle and discard it in a waste box immediately after removal of needle.
(iii) If the removed needles are stored tentatively in a plate for reuse, align them.

Measures to be taken at occurrence

Prompt action is required. The action is performed according to the measures for needling accident with injection needle.

(i) Wash the wound with soap and running water. Wash so as to squeeze the blood as much as possible.
(ii) Identify the pathogens in the patient who underwent the acupuncture treatment and test the antibody owned by the practitioner who had an accident.
(iii) If hepatitis B infection is suspected, start administration of globulin preparation for hepatitis B or vaccination within 24 hours if the practitioner has no HBs antibody.
(iv) Because there is no recommended preventive measures for hepatitis C (HCV) now, undergo the follow-up inspection at medical institution.
(v) As concerns HIV, anti-HIV drugs are present, but the treatment is determined based on the patient information.

Fall from bed

Cause

 Likely to occur at going up to and down from a bed and at postural change. It is observed frequently in the patients with dizziness or the elderly.

Preventive measures

(i) Since it is likely to occur at postural change, be sure to take care of the patient at postural change (change the posture after lowering the level of electrical bed as needed).
(ii) At going up and down of electrical bed, call the patient and perform postural change and boarding and exiting after the motion stopped completely.
(iii) Have the patients with dizziness due to tinnitus and/or hearing loss, the patients with anemia and/or orthostatic hypotension, etc. sit for a while after treatment and go down from the bed after confirming the absence of wobble.
(iv) Considering the occurrence of secondary accident such as fall and upset, organize the surrounding of bed at all times.
Measures to be taken at occurrence

When the patient fell, check the presence of bruise on the head or injury or abnormality on the body. Have the patient undergo medical examination at medical institution as needed.


翻訳・改編
○穂田高士：医療過誤を起こさないために、坂本秀監修、古屋英治、井上悦子、貫山浩之編
ポケット鍼灸臨床ガイドベッドサイドで即効 第3版，アルテミシア 森ノ宮医療学園出版部，大阪，pp.25-40，2009