Lower Back Pain Case Report

(A) Diagnoses of Diseases and Patterns

[1] According to *Mai Yao Jing Wei Lun Bian* (脈要精微論篇) of *Huang Di Nei Jing* (黃帝內經), *Su Wei* (素問), "the lower back is the dwelling house of the kidney. Therefore if you cannot turn your waist, it is due to the kidney being very tired and exhausted." This explains the point of the lower back pain due to kidney deficiency.

*Su Wei* (素問), *Ci Yao Tong Bian* (刺腰痛篇), describes definitely that Foot Three Yin, Foot Three Yang and the Eight Extra Vessels are acupuncture points to treat the disease of lower back pain and the book introduces the acupuncture and moxibustion therapy corresponding the disease as well.

Also, according to *Jin Gui Yao Lue* (金櫃要略), *Wu Zang Feng Han Ji Ju Bing* (五臟風寒積聚病), "a person suffering from kidney fixity (腎著) experiences generalized heaviness and lumbar coldness as though sitting in water. The symptoms may resemble those of water conditions, but there is an absence of thirst with uninhibited urination, and with eating and drinking as normal. This indicates that the disease is attributed to the lower burner. Sweating during physical labor leads to cold and wetness inside the clothes. Over a long period of time, the condition develops and manifests with cold pain below the waist, and abdominal heaviness as if carrying five thousand coins. These symptoms are due to cold-dampness's invasion. *Gan Jiang Ling Zhu Tang* is indicated."

*Kidney fixity (腎著): Stagnation associated with the kidney caused by cold and damp evils lodging in the lumbus, which eventually stagnate in the collaterals.*

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>華草</td>
</tr>
<tr>
<td>乾薑</td>
</tr>
<tr>
<td>白朮</td>
</tr>
<tr>
<td>茯苓</td>
</tr>
</tbody>
</table>

Decoct all four ingredients in 4 sheng water until 3 sheng remains.
Divide and take warn, three times.
The lumbar should begin to feel warm immediately after ingestion.

In *Zhu Bing Yuan Hou Lun* (諸病源候論) and *Sheng Ji Cong Lu* (聖濟總錄), the causes of lower back pain are related to the following five situations;
- The deficiency of Shaoyin and Shaoyang,
- Wind-cold invading into the region of waist,
- Weakening of the kidney due to heavy works,
- Damaging kidney due to falling down,
- Staying and sleeping on the damp ground.

*Dan Xi Xin Fa* (丹溪心法), the Chapter of Lower Back Pain, points out that the causes of lower back pain originate in mainly damp-heat, kidney deficiency, blood stasis, sprain or contusion, and phlegm accumulation. *Qi Song Yan Ji* (七松岩集), the Chapter of Lower Back Pain, explains as following; "The pain (of lower back) is divided into Deficiency and Excess, and the syndromes of deficiency are due to weakness of 'Essence-Spirit-Qi-Blood' of both kidney, also the syndromes of deficiency mean the diseases of both kidney themselves. The so-called 'syndromes of excess' are not from the
syndromes of excess, but the pains by blocking due to accumulating of dampness, phlegm and blood stasis in the cavity of lower back, which result from gaining weight because of attacks of wind-cold-dampness in the meridians and blood channels of both waist. The practitioner has to differentiate and treat in according to the pulse diagnosis."

About the clinical treatment, in Zheng Zhi Hui Bu (證治匯補), the Chapter of Lower Back Pain, mentions as following; "When treating, first we have to tonify the kidney, and then treat in according to appearance of the pathogenic qi. And then if the exterior is urgent we have to treat it, if the root is urgent we have to treat it. On the early stage of pain, we had better remove the evil body and manage the meridians and collaterals. In case of chronic pain, we had better tonify the true originality and nourish the blood and qi." As the above, the principle that we judge the exterior and the root, front and rear, slowness and fastness, and then treat in according to them in clinic is very important.3)

**Diagnosis**

a) Acute lumbar pain, which has a shorter sickness course, may be aggravated on one side or on both of the lumbar regions by slight activities, often with obvious tenderness on both sides of the spinal column.

b) Chronic lumbar pain, which has a longer sickness course and is difficult to be completely cured, is often manifested as dull pain or aching pain in lumbar region. It might be aggravated by improper body position, over fatigue, change of weather, etc.

c) The disease often has relevant case history of dwelling place being damp, shady and cold, or wading into water, or catching by rain, or sudden sprain and contusion, or over fatigue and strain, etc.

d) Lumbar pain, a disease caused by many etiological factors. It will be helpful for the diagnosis of rheumatism and rheumatoid disease with the laboratory examination of blood routine, antistreptococcus O, erythrocyte sedimentation rate, and rheumatoid factor. Lumbar pain can also be induced by some internal disease. It will be helpful for diagnosing urinary diseases with tests. A blood test and urological image examination, during a gynecologic examination can exclude some gynecologic disease accompanied with lumbar pain.

[2] On the other hand, in Ling Shu (靈樞), The girth of a waist is 4 feet and 3 inch. The bone of the waist is the largest joint in our body.5)

Also, on the waist, the condition of kidney appears as it is and the whole body is bent or stretched itself by the waist energy so that all meridians go through the kidney and connect with the waist and the vertebra. Although the exogenous pathogenic factors disease and the endogenous factors disease are not equal to each other, these two can invade if the kidney is deficient. Therefore, only cold herbs cannot be used. Only herbs that tonify qi as like Huang Qi or Ren Shen cannot be used.5)

[3] In Dong Yi Bao Jian (東醫寶鑑), the causes of lower back pain are divided to 10 kinds as follows7):

- Pain from kidney deficiency
- Pain from phlegm
- Pain from food stagnation
- Pain from being twisted
- Pain from blood stasis
- Pain from wind
- Pain from cold
- Pain from damp
• Pain from damp-heat
• Pain from qi

[4] According to the above, the summary of the lower back pain is as follows:

Lower back pain (pain in the lumbar region) is closely associated with disorders of the kidney for the lumbus is the seat of the kidney.

Clinically, lower back pain can be found in various diseases. This section only deals with the following etiological factors: 1. Invasion of exogenous pathogenic cold and damp; 2. Deficiency of qi of the kidney; and 3. Sprain or contusion.

**Etiology and Pathogenesis**

a) Invasion by pathogenic cold and damp: In this case lower back pain is due to obstruction of circulation of qi in meridians and collaterals. The precipitating factors may be living in cold and damp places, exposure to the rain or wading in water, or being drenched with sweat.

b) Deficiency of the kidney qi: In this case lower back pain is generally due to excessive sexual activity that consumes essence and qi, resulting in poor nourishment of the meridians in the lumbar region.

c) Trauma due to sprain or contusion: Trauma may cause injury of qi and blood in the meridians and collaterals, leading to stagnation of qi and blood, thus producing lower back pain.

**Differentiation**

a) Cold damp

Main manifestations: Lower back pain usually occurring after exposure to cold and damp and aggravated on rainy days, heavy sensation and stiffness of the muscles in the dorsolumbar region, limitation of extension and flection of the back, pain radiating downwards to the buttocks and lower limbs, cold feeling of the affected area, white and sticky tongue coating, deep and weak, or deep and slow pulse.

Analysis: Pathogenic cold and damp characterized by viscosity and stagnation block the meridians and collaterals, causing retarded circulation of qi and blood. This produces heaviness, cold sensation and pain in the lumbar region and limitation of extension and flection of the back. Stagnation of qi and blood becomes worse on cloudy and rainy days, and so does the pain. Accumulation of cold and damp gives rise to the white sticky tongue coating and the deep, weak or deep, slow pulse.

b) Kidney deficiency

Main manifestations: Insidious onset of protracted pain and soreness, accompanied by lassitude and weakness of the loins and knees, aggravated by fatigue and alleviated by bed rest. In case of deficiency of kidney yang, cramp-like sensation in the lower abdomen, pallor, normal taste in the mouth, cold limbs, pale tongue, deep thready or deep slow pulse. In case of deficiency of kidney yin, irritability, insomnia, dry mouth and throat, flushed face, feverish sensation in the chest, palms and soles, reddened tongue proper with scanty coating, thready weak or thready rapid pulse.

Analysis: The lumbar region is said to be the ‘dwelling house of the kidney.’ The kidney dominates the bones, produces marrow and stores essence. When the kidney has insufficient essence, the bone is lacking of marrow, and the result is soreness and pain in the lumbar region accompanied by weakness of the knees. Over strain and stress consume essence and qi, and make the pain worse. Pain is lessened by bed rest, which makes qi quiescent. In case of deficiency of kidney yang, the kidney fails to warm the lower abdomen and the limbs. This gives rise to cramp-like sensation in the lower abdomen and cold limbs. Deficiency of yang causes pallor, pale tongue,
deep thready or deep slow pulse. When yin is deficient, kidney water is unable to ascend to reduce the heart fire. This results in irritability and insomnia. Deficiency of yin causes excessive internal heat, which gives rise to the following symptoms: flushed face, feverish sensation in the chest, palms and soles, dryness of the mouth and throat, reddened tongue with little coating, thready weak or thready rapid pulse.

c) Trauma
Main manifestations: History of sprain of the lumbar region, rigidity and pain of the lower back which is generally fixed in a certain area, and is aggravated by pressure and by turning the body, pink or dark purplish tongue proper, string-taut hesitant pulse.
Analysis: Muscular strain in the lumbar region causes retardation of qi and blood and further leads to stagnation of qi and blood and further leads to stagnation of blood in the meridians and collaterals. The result is the fixed severe pain which can be aggravated by pressure. String-taut pulse is associated with pain, dark purplish tongue proper and hesitant pulse and signs of blood stasis.

Remarks:
Lower back pain may be seen in renal diseases, rheumatism, rheumatoid or arthritis, hyperplastic spondilitities, muscle strain or traumatic injury or the lumbar region.

▲ Western Differential Diagnosis:

[1] Differentiation from Kinds of Pain

- Pain during lifting heavy things - Acute lower back pain (ICD-9 Code:847.2)
- Acute pain and radiation to lower limbs - lumbar herniated intervertebral disc (ICD-9 Code:722.90)
- Pain caused by being tired - spondylosis deformans (ICD-9 Code:724.2)
- Chronic lower back pain, heavy waist and weak waist - spondylolysis, spondylolisthesis (ICD-9 Code:724.2)
- Dull pain in the waist region after middle age, when moving, the pain gets weaker, but it returns - spinal stenosis (ICD-9 Code:724.2)

[2] Differentiation from Kinds of Cause

Symptoms of low back pain depend on the cause.
a) Back sprain or strain
- Symptoms typically include:
  - Muscle spasms, cramping, and stiffness.
  - Pain in the back and sometimes in the buttock. It may come on quickly or gradually. It most often occurs in episodes. Certain movements make it worse, and doing light activities such as walking makes it feel better. The worst pain usually lasts 48 to 72 hours and may be followed by days or weeks of less severe pain.

b) Nerve-root pressure
- Symptoms typically include:
  - Leg pain.
  - If pain extends below the knee, it is more likely to be due to pressure on a nerve than to a muscle problem. Most commonly, it's a pain that starts in the buttock and travels down the back of the leg as far as the ankle or foot. This pain pattern is known as sciatica (say...
"sy-AT-ih-kuh").

- Nerve-related problems, such as tingling, numbness, or weakness in one leg or in the foot, lower leg, or both legs. Tingling may begin in the buttock and extend to the ankle or foot. Weakness or numbness in both legs, or loss of bladder and/or bowel control, are symptoms of cauda equina syndrome, which requires immediate medical attention.

c) Arthritis of the spine
- Osteoarthritis of the spine usually causes pain that:
- Is worse in the back and hip region.
- Starts gradually, gets worse over time, and lasts longer than 3 to 6 months.
- Is generally worse in the morning or after prolonged periods of inactivity. Arthritis pain gets better when you move around.

d) Other conditions
- Symptoms of diseases that affect the spine depend on the disease. They may include:
- Pain that is worse in the affected part of the spine (for instance, if there is a compression fracture, tumor, or infection).
- Pain that starts gradually, is constant, and may be sharp or a dull ache. Bed rest doesn't help and may make it worse (for example, tumors on the spine often cause night pain). The pain lasts longer than 2 to 3 weeks.
- Fever.
- Sensitivity of the spine to touch and pressure.
- Pain that wakes you up from sleep.

The etiologies of lumbar spine diseases consist of lumbar sprain/strain and chronic repetitive injuries to the lower back. Such injuries can cause an imbalance in the paraspinal muscles, and disc herniation or degeneration that leads to spinal curvature change and alteration in vertebral biomechanics. The pathological condition will interfere with the spinal cord and the cauda equina, which eventually leads to nerve root symptoms. Because lower extremity muscles are innervated by the lumbar spine nerve, most lumbar spine diseases generate pain in the lower extremity. Clinically, symptoms in the lower extremity and the lower back are often associated closely.

Joint abnormality due to metabolic changes, osteoporosis, or old fractures may all cause pathological changes in the lumbar vertebra.

Joint infections such as osteomyelitis, Osseo-tuberculosis, or lumbar bone tumors are not discussed here. Thus, it is critical to differentiate these diagnostics in the clinic.

[4] Injury of Lumbar Region

a) Acute Lumbar Sprain

Acute lumbar sprain, the most frequent among lumbar injuries, is one cause of lumbago and backache.

**Injury Mechanism**

- Bending the waist to lift heavy objects: Over-extension in weight-lifting may cause strain due to unbalanced exertion of the two sides of the body. Over-extension of such muscles as the sacrospinal muscles, the quadrate muscles of loins, the greater psoas muscles and certain deeply located small muscles may also cause injury to lumbar ligaments (the anterior longitudinal, posterior longitudinal, interspinal and supraspinal ligaments as well as the yellow ligaments). Lifting over-heavy objects causes contraction of the back and buttock muscles, and if the load cannot be lifted, the strong force transmits to the lumbar region and causes sprain. Lifting heavy objects in a squatting position may avoid lumbar sprain.
- Improper position of rotation of the lumbar region may cause sprain of the muscles and dislocation of the small vertebral joints, such as in discus and hammer throwing uncoordinated movements in swift rotation of the body can cause sprain in the lumbar region.
- Direct impact of external force on lumbar region: External force from sudden mutual collision in football and ice-hockey games may cause sprain of the back muscles and ligaments and may even cause laceration of ligaments and fracture.
- Over-flection and over-extension of spine may lead to lumbar strain. A gymnast not fully warmed up for doing somersaults is subject to lumbar sprain.
- Lumbar sprain can also be caused by incorrect standing position, sudden turning of the lumbar region and even by coughing or sneezing.

If spinal movements exceed the normal range due to external force, temporary over-pulling and turning may occur, causing extension and laceration of muscles, ligaments and articular capsules as well as swelling, hyperaemia and bleeding in soft tissues. Rupture of articular capsules is accompanied by haemarthrosis. Organization of haemarthrosis causes adhesion in the joints. Organization of muscular and ligamental
tissues may induce fibroid adhesion. Over-pulling of ligaments may cause avulsion fracture of vertebral column. In some cases lumbar sprain is complicated by injury of superior clunial nerve, piriformis and lumbodorsal fascia.

b) Lumbar Strain

Lumbar strain refers to chronic injuries of lumbar and back muscles, fasciate, ligaments, articular capsules and bony tissues. This injury is a main cause of lumbago and backache.

**Injury Mechanism**

- In normal conditions, the intervertebral discs, small joints and ligaments are well co-ordinated and they facilitate and support each other automatically. This kind of coordination is usually referred to as internal balance and is not subject to control by subjective will. Long-time activity exceeding certain limits, incorrect movements or improper exertion of strength can all cause chronic injuries. Lumbar muscles are well coordinated in action. We call this external balance or active coordination subject to control by the subjective will. However, injury may also occur when muscular movements exceed certain limits or the muscles are in a state of prolonged tension.
- Inadequate treatment and recuperation of acute lumbar injury may result in such sequelae as repeated lumbar injury, local bleeding and exudation, tissue fibrosis and abrading of bone joints.
- Lumbar strain can also be caused by long-time incorrect position of lumbodorsal region in sports activities, excessive training and frequent repetition of a single movement.
- Fatigue and long-term exposure to exogenous cold, wind and dampness may lead to dysfunction of nerves and blood vessels as well as qi stagnation and blood stasis.

C) Lumbar Articular Synovial Incarceration

Lumbar articular synovial incarceration presents obvious lumbago while the function of the lumbar region is totally lost, with bending at the waist impossible. Timely treatment, however, yields satisfactory curative effects.

**Injury Mechanism**

- Lumbar articular synovial incarceration usually occurs at the posterior lumbar vertebral joint. When doing the movements of forward over-flection, lateral over-flection or rotation of the vertebral column, the posterior space posterior lumbar vertebral joints is open and the synovium enters the space; if the vertebral column straightens suddenly at this time, the synovium may be incarcerated in the joint.
- The articular synovium is rich in nerve endings producing pain, so the squeezing of the nerves and synovium may produce severe pain and reflex spasm of the muscles, the spasm in turn fixing the squeezing on the synovium in the joint region. Synovial hyperaemia and edema appear after incarceration. Synovial incarceration may be removed by prompt manual treatment, though 1-2 weeks are needed for lesions at the synovia to be cured.

d) Posterior Articular Disturbance of Lumbar Vertebrae

Also called disturbance of vertebral facet joint and malposition of lumbar vertebrae, posterior articular disturbance of lumbar vertebrae is a common cause of lumbago.

Posterior articulation of lumbar vertebrae is composed of articular processes of two adjacent lumbar vertebrae, i.e., the two inferior articular processes of a superior lumbar vertebrae and the two superior articular processes of an inferior lumbar vertebra, which are encircled by thin and tight articular capsules. Their main function is to stabilize the vertebral column. When the
range of movement of posterior articulation of lumbar vertebrae is large, they also participate in partial lumbar movement.

**Injury Mechanism**

- Subluxation of posterior articulation of lumbar vertebra: This injury may be induced by such causes as the lumbar region not being adequately warmed up before vigorous activity, being tired after physical training so that the muscles lose the ability of control, i.e., the external balance is lost; sudden flection, extension or rotation movement. chronic strain: This is the main cause of posterior articular disturbance of lumbar vertebrae. Long-term over-vigorous movement of the lumbar region results in retrograde changes intervertebral disc and stenosis of interspace of lumbar vertebrae. Correspondingly, the interspace of posterior articulation of lumbar vertebrae is also stenosed. Long-term friction of articulation leads to hyperosteogeny, thickening of synovium and osteoarthropathy of posterior articulation of lumbar vertebrae.

  • If acute subluxation of posterior articulation or synovial incarceration is not reduced promptly, inflammation and thickening of synovium may result. Friction of bony tissues in abnormal position may cause lumbago.

e) Periostitis of Spinous Process

A frequent occurring disease, periostitis of the spinous process occurs most often in the lumbar area and next in the lumbosacral area while it is seldom seen in the thoracic area.

**Injury Mechanism**

- Excess dorsiflexion exercise of the vertebral column causes mutual squeezing and collision between spinous processes, causing injury of supraspinal and interspinal ligaments. In chronic cases there may be hyperosteogeny of the spinous process and calcification of ligament.
- Excess dorsiflexion exercises of vertebral column causes the supraspinal and interspinal ligaments to pull hard on the spinous process, resulting in pathological changes in the terminal of this spinous processes.
- Delay in treatment of supraspinal and interspinal ligaments; frequent recurrence of pulling.
- Lack of physical training results in poor lumbo dorsal muscle strength, so in order to sustain forward flection and backward extension of the vertebral column, the burden on the supraspinal and interspinal ligaments is increased, pulling on spinous processes is aggravated and chronic strain results.

f) Syndrome of the Third Lumbar Vertebral Transverse Process

**Injury Mechanism**

- This is also a frequent occurring disease. The third lumbar vertebra is the center of lumbar motion, the sacrospinal muscle, the quadratus muscle of loins, the greater psoas muscle and the iliopsoas muscle all adhering to it. The longest of all, the third lumbar vertebral transverse process bears the greatest pulling force. Both repeated violent motion of the lumbar region and repeated minor injuries to the ends of tendons may cause local enthesiopathy.
- Trauma in the lumbar region, tension or violent contraction of lumbodorsal muscles on one side may pull and injure the muscles adhered to the third transverse process. In light cases there may be local hematoma, while in serious ones there may be avulsion at the transverse process, causing fracture.
- Since the third lumbar vertebral transverse process is long and links closely with the depths of lumbodorsal fascia, any over-motion of muscular fascia may stimulate the apex
of the transverse process and cause local synovitis, local tumefaction and pain, and synovial bursa.

g) Lumbodorsal Fascitis

A main cause of lumbodorsal disorders, this disease is also called myofascial fibrositis, myofascitis, rheumatism, myofascial pain syndrome and myofibrositis.

Injury Mechanism
• Injury: Lumbodorsal fasciae cover the trapzeius, the broadest muscle of the back and the sacrospinal muscle. Violent movement in the lumbodorsal area may cause acute injury to the fasciae and muscles; fibrosis of injured tissues results in focus of pain. When the lumbodorsal fasciae rupture, the adipose tissues under them protrude from the split, forming adipocele, incarceration of which in the fasciae causes pain. Small foci may also result from repeated minor injuries to the lumbodorsal fasciae due to lumbar strain.
• Cold and dampness: The patient has a history of attack by exogenous cold and dampness before the onset of the disease. This may occur in taking a cold bath right training, exposure to cold at night, especially when the lumbar area is exposed to direct blowing by electric fan for a long time. Prolonged exposure to cold and dampness may also cause this disease, which is more serious in bad weather.
• Infection: With common cold or tonsillitis the patient may also suffer from lumbago and stiffness in the lumbodorsal region which will ease when the infection is controlled. This disease may also cause by such factors as fatigue, prolonged anxiety, weakening of neuro-regulation function and the body's protective ability against exogenous wind, cold and dampness.

h) Protrusion of Intervertebral Disc

Protrusion of intervertebral disc is a common sports injury. Although it can be treated by surgery, it is liable to recur.

Injury Mechanism
• Anatomical characteristics: There is an intervertebral disc for each vertebral body from the second cervical vertebra to the first sacral vertebra, 23 in all and accounting for one-fourth of the total length of the vertebral column. Of all these intervertebral discs those at the lumbar region are the largest and are wedge-like, wide in front and thin in back. Each of the disc is composed of three parts: the upper and lower parts are two discoid cartilages that link closely with the surface of the upper and lower vertebral bodies and with the peripheral fibrae. Their function is to prevent the pulpiform muscles from protruding upward and downward. The middle part is a fibrous ring, which is a fibrocartilaginous tissue rich with ligaments and links with the periphery of the discoid cartilages to ensure firm contact between the two discoid cartilages so as to prevent the pulpiform nucleus from protruding in any direction. The pulpiform nucleus is a residue of the notochord and is a glue-like elastic substance of greyish white color that contains 88 percent water. Encircled by the fibrous ring and the discoid cartilages it has no special form, which varies according to vertebral activity. It performs a spring function to lessen vibration of the vertebral column. Since the intervertebral discs have no blood circulation themselves, their generative ability is very poor once ruptured.
• The intervertebral discs have the characteristic of denaturation. After the age of 20, their elasticity weakens and there appears a split in the fibrous ring due to denaturation, allowing the pulpiform nucleus to protrude. This change constitutes the endopathic cause of intervertebral disc protrusion. The region of the fourth and fifth intervertebral discs is the area most often injured because the waist bears most of the torso's movement and
weight. The fibrous ring is often ruptured by trauma, and the types of trauma vary, such as acute lumbar sprain and lumbar strain. Most such patients have a medical history of some trauma in the lumbar region.

- Attack by pathogenic wind, cold and dampness in the lumbar region. Some patients have no evident medical history of trauma. Yet, they do have a history of attack by pathogenic wind and cold.
- The main physiological change in case of intervertebral disc protrusion is rupture of the fibrous ring accompanied by backward protrusion of the pulpiform nucleus into the vertebral canal to constrict the nerve roots. The size of the protruded substance varies though it is usually the size of a soybean. The protrusion squeezes, constricts or pushes up the nerve roots or adheres to them. Another type of intervertebral disc protrusion is the central type such as that constricting the cauda equina nerve and bilateral nerve roots, thus giving rise to symptoms of constriction on the cauda equina nerve.

i) Lumbar Isthmic Dehiscence and Spondylolisthesis

The narrow part of the upper and lower spinous processes of lumbar vertebrae is called isthmus. Disunion of isthmus caused by injury of hereditary malformation is called isthmic dehiscence of vertebral disintegration. A third of such patients may suffer from vertebral displacement, called spondylolisthesis.

**Injury Mechanism**
- **Lumbar Isthmic Dehiscence**
  - Acute fracture of lumbar vertebra: Isthmic fracture of lumbar vertebra may be caused by direct impact on the lumbar region due to falling from a great height or by sudden over-extension of the lumbar region, both rare accidents.
  - Hereditary malformation and disunion of isthmus.
  - Chronic injury: Repeated activities of the lumbar region with burden, such as clean and jerk in weightlifting and backward somersault in gymnastics, cause the lower articular process of the upper lumbar vertebra and the upper articular process of the lower lumbar vertebra (or the sacral vertebra) to squeeze and impact the isthmus, resulting in fracture. To lift heavy object by bending the waist, such as lifting barbells or repeated turning of the waist may generate a shearing force at the isthmus and thus cause fracture. Isthmic dehiscence may occur on one or both sides, mostly at the fifth lumbar vertebra and seldom at the fourth lumbar vertebra. Most cases of isthmic dehiscence involve only one isthmus. Yet, there are a small number of cases that involve two or more isthmuses.

  The isthmus, being very narrow, is easily acted on by shearing force, and since its blood circulation is poor, a natural cure is difficult.

- **Spondylolisthesis**
  - Physiologically, there is a forward curvature at the lumbosacral portion with a tendency of forward displacement of the lumbar vertebrae and backward displacement of the sacral vertebrae. In bilateral isthmic dehiscence, due to the effect of the shearing force from the lumbosacral portion, the lumbar vertebra slips forward and the sacral vertebra correspondingly displaces backward. Spondylolisthesis may be accompanied by protrusion of intervertebral disc. In cases of serious displacement, the cauda equina nerve is constricted, giving rise to a series related symptoms.

h) Spine Fracture

Spine fracture is a serious injury. It can be divided into stable fracture and unstable fracture. The following is a brief introduction of stable fracture.

**Injury Mechanism**

As the central axis of the trunk, the spine is a part of the thoracic cavity, the abdominal cavity and the pelvis. It bears the burden, facilitates movements, cushions vibration and balances the body. As the range of activity of the thoracic and lumbar portion of the spine is the largest, it bears the heaviest burden and serves as the turning point for forward and backward bending of the physiological curvature. Therefore, fracture of the spine often occurs here. Fractures between the 12th thoracic and the second lumbar vertebrae account for about 70 percent of all spinal fractures. Deformation displacement may remain after injury. Chronic fracture may cause disuse atrophy of lumbodorsal muscles and local tissue adhesion, resulting in weakening the lumbar functions and chronic lumbago.

Spinal fracture is often caused by an external force. Landing on the ground on the foot or buttock in a fall from a great height will cause over-flection of the spine due to external force, causing flection-type fracture. Direct impact on the lumbar region while in standing position may cause extension-type fracture, a type rarely seen.

Spine stability after a stable fracture is fine, without the possibility of displacement, such as in simple compression fracture, simple fracture of spinous and transverse processes. Fracture displacement may occur in the unstable type because the spine is no longer stable, such as in serious compression fracture and dislocation of posterior spinal articulation which may injure the spinal cord.

(P) Treatment

Treatment Principle:
- Promote the circulation of qi and blood
- Relieve pain
- Relax the muscles
- Activate the blood circulation in the collaterals

Treatment Plan: Points are mainly selected from the Du Mai and the Foot-Taiyang Meridian
- Acupuncture and moxa are applied together for cold-damp type.
- In case of deficiency of the kidney yang, apply needling with reinforcing method and moxa.
- For deficiency of the kidney yin, puncture with reinforcing method.
- For traumatic low back pain, apply reducing method or pricking to cause bleeding.

Acupuncture Points:

a) Prescription:
- UB 23 - regulates kidney qi, strengthens lumbar vertebrae, benefits ears and eyes. (Moxa may also be applied to this point to eliminate cold and damp.)
- DU 3 - regulates kidney qi, benefits the lower back and knees, and eliminates cold-dampness. (Local point)
- UB 40 - drains summer heat, benefits the lower back and knees, relaxes the sinews, removes obstructions from meridian eliminate blood stasis. (This is one of 'Four Key Points,' and an important distal point for the treatment of the lower back pain.)

b) Supplementary points:
   a Cold damp: Acupuncture and moxa are applied together.
   - UB 25 - regulates intestines and stomach, benefits lower back and knees.
   - UB 26 - regulates Lower Burner, strengthens lower back and knees, transforms damp stagnation, and clears the meridian.

b Deficiency of the kidney yang: Needling with tonifying method and moxa.
   - DU 4 - nourishes the yuan-qi and strengthens the kidney, benefits the lumbar vertebrae
and essence, warms the Ming-men, and expels cold. (Combination of acupuncture and moxa applied to this point can tonify the kidney yang and strengthen the kidney essence as well.)

- Yaoyan (Extra) - Combination of acupuncture and moxa applied to this point can tonify the kidney yang and strengthen the kidney essence as well.)

- **Deficiency of the kidney yin: Needling with tonifying method.**
  - UB 52 - tonifies kidney and strengthens the back, reinforces the will power.
  - KI 3 - benefits kidney, cools heat, strengthens the lower back and knees, and regulates the uterus.

- **Traumatic injury: Needling with sedating method or pricking or bleeding.**
  - DU 26 - clears the senses, cools heat, calms the spirit, and benefits lumbar spine. (This is a distal point effective for treating rigidity and pain of the lumbar region.)
  - Yaotongxu (Extra) - This point is an empirical point used in treating sprain of the lumbar region.

- **Huatuojiaji points** - When the lumbar vertebrae are diseased, the corresponding Huatuojiaji points may be used effectively.

**Herbal Prescription:**

**Bulk:**

<table>
<thead>
<tr>
<th>Cause</th>
<th>Formula</th>
<th>Ingredients (g)</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold-Damp</td>
<td>Gan Cao Gan</td>
<td>Gan-Jiang (12)</td>
<td>Warm yang and strengthen the spleen, Dispel cold and dampness</td>
</tr>
<tr>
<td>South-Cold</td>
<td>Jiang Fu Ling Bai</td>
<td>Bai-Zhu (6)</td>
<td></td>
</tr>
<tr>
<td>Damp</td>
<td>Zhu Tang</td>
<td>Gan-Cao (6)</td>
<td></td>
</tr>
<tr>
<td>Damp-Heat</td>
<td>Si Miao Wan</td>
<td>Huang-Bai (6-9)</td>
<td>Clear heat, Dry Dampness, Transform dampness</td>
</tr>
<tr>
<td>South-Damp</td>
<td>(四妙丸)</td>
<td>Yi-Yi-Ren (6-12)</td>
<td></td>
</tr>
<tr>
<td>Blood Stasis</td>
<td>Shen Tong Zhu Yu</td>
<td>Niu-Xi (6-12)</td>
<td>Invigorates the blood, Promotes the qi movement, Dispers blood stasis, Unblocks the collaterals, Unblocks painful obstruction, Stops pain</td>
</tr>
<tr>
<td>Tang (身痛逐瘀湯)</td>
<td>Qin-Jiao (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South-Blood</td>
<td>Chuan-Xiong (6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stasis</td>
<td>Tao-Ren (9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South-Stasis</td>
<td>Hong-Hua (9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stasis</td>
<td>Gan-Cao (6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stasis</td>
<td>Mo-Yao (6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South-Stasis</td>
<td>Wu-Ling-Zhi (6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stasis</td>
<td>Di-Long (6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stasis</td>
<td>Dang-Giu (9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South-Stasis</td>
<td>Chuan-Niu-Xi (9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stasis</td>
<td>Xiang-Fu (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South-Stasis</td>
<td>Qiang-Huo (3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Recommendations/Nursing/Lifestyle Advice:

- **Back Pain Solutions: Exercise and Movement Therapies**
  - Being active is good for everyone, even if you have back pain. Some gentle types of exercise and movement therapies may help you get stronger, which could help you feel better. You may also need other medical treatments for your back pain; exercise alone may not be enough. It is a good idea to build the strength in the muscles that support your back.

**Remarks:**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis</td>
<td>Patient 1</td>
<td>Patient 2</td>
<td>Patient 3</td>
<td>Patient 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kidney Deficiency &amp; Qi-Blood Stasis</td>
<td>Kidney Deficiency &amp; Qi-Blood Stasis</td>
<td>Kidney Deficiency &amp; Qi-Blood Stasis</td>
<td>Kidney Deficiency &amp; Qi-Blood Stasis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acupoints</td>
<td>UB 23, 40, 52, 60, 62, DU 2, 3, 4, LI 4, LV 3, SI 3, GB 34, KI 3, Yao-Yan, Yao-Tong</td>
<td>UB 23, 40, 52, 60, 62, DU 2, 3, 4, KD 3, LI 4, LV 3, SI 3, GB 34, ST 36, Yao-Yan, Yao-Tong, Huan-Zhong, Local Points on Thigh</td>
<td>UB 23, 40, 52, 60, 62, DU 2, 3, 4, LI 4, LV 3, SI 3, GB 34, KI 3, Yao-Yan, Yao-Tong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herbs</td>
<td>Not</td>
<td>Not</td>
<td>Not</td>
<td>Not</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatments (Number of Times)</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of Treatment</td>
<td>from Nov-3-2013 to Jan-31-2014</td>
<td>Feb-17-2014</td>
<td>May-21-2014</td>
<td>from May-22-2014 to Jun-5-2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>Occasional</td>
<td>Currently treating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**References:**


10) http://www.webmd.com/back-pain/tc/low-back-pain-symptoms
12) http://www.hughston.com/hha/b_12_1_1a.jpg


16) Song, Simon K. (2013), Lecture Notes on Oriental Medicine, American Integrative Medicine Institute, Los Angeles, p. 400.