Peridural Injection of *Mailuoning* Compound Liquor for Treatment of Prolapse of Lumbar Intervertebral Disc in 100 Cases

ZHI Man-xia 支满霞, ZHANG Guo-bin 张国斌, HOU Jin-cai 侯进才, YANG Yu-hong 杨玉红 & WAN Zheng-zuo 万政佐

Wangjing Hospital, China Academy of Chinese Medical Sciences, Beijing 100102, China

**Objective:** To observe the therapeutic effects of peridural injection of *Mailuoning* Compound Liquor (脉络宁复合液) for prolapse of lumbar intervertebral disc (PLID). **Methods:** Peridural injection of *Mailuoning* Compound Liquor (MCL) was given to 100 cases of PLID, once a week, 4 sessions constituting a therapeutic course. By adopting the scoring method, observations were carried out on the total therapeutic effect and changes in the 13 items of the symptoms and signs. **Results:** After treatment, the JOA scores in this series of patients were markedly enhanced as compared with the scores before treatment, showing significant differences in the paired t test ($P<0.05$). The sum of the excellent and good rates was 64%, and the total effective rate was 97%. All the scores in the 13 items under observation were significantly raised as compared with the scores before treatment ($P<0.05$). **Conclusion:** Peridural injection of MCL is an effective and safe therapy for PLID, and with shorter treating course, quicker therapeutic effects, and less suffering for the patients.

**Key words:** prolapse of lumbar intervertebral disc (PLID); peridural injection; *Mailuoning* Compound Liquor

Because of quick therapeutic effects with the medicine directly reaching to the focus, peridural nerve block therapy has become a common and non-operative therapy for prolapse of lumbar intervertebral disc (PLID). Since glucocorticoid hormone may cause side effects, *Mailuoning* Compound Liquor (MCL) was used instead for peridural injection, with the good effects as reported in the following.

**CLINICAL MATERIALS**

**The criteria for enrollment**
All the cases enrolled conformed to the diagnostic criteria for PLID$^1$ with the clinical symptoms and signs corresponding to the prolapsed part shown by the image examination, and with the protruded part proved by CT or MRI to be smaller than 1/2 of the anterior-posterior diameter of the vertebral canal.

**The criteria for exclusion**
The cases of simple spinal canal stenosis, lumbar spondylothesis, lumbar tumor, lumbar tuberculosis and syndrome of cauda equina were all excluded. And the patients with autoimmune diseases, allergic diseases, diseases of the central nervous system, diseases of the heart, liver, lung, and kidney, and endocrinopathy were also excluded.

**General data**
The 100 cases in this series were selected in the period from August 2003 to December 2004. Of them, 56 cases were male and 44 female, aged from 20–81 years with a mean of 52.43±14 years; and the duration of the illness was from 6 months to 10 years, with a mean of 5.6±2.1 years. One case had the protrusion between L1-2, 7 cases between L3-4, 48 cases between L4-5, 11 cases between L5-S1, 10 had prolapse of L3-4 and L4-5, 22 had prolapse of L4-5 and L5-S1, and 1 cases between L3-4 and L5-S1. Among the 100 cases, 37 had history of trauma, and 14 were postoperative case.

**METHODS**

**Methods of treatment**
The MCL used was a preparation composed of *Mailuoning* Injection, 2% lidocaine and 5% sodium
bicarbonate. The patient was asked to be in a latericumbent position. 3 ml of 1% lidocaine was used for the local infiltration anesthesia. Then, a 16# peridural puncture needle was used for puncture to the epidural space. After a successful puncture, 12–15ml of MCL was slowly injected. 30 min later, the patient took a supine position and shook the legs. The treatment was given once a week, with 4 treatments constituting a therapeutic course.

The evaluation indexes

The evaluation criteria for therapeutic effects in lumbodorsal pain set by the Japanese Orthopedic Association (JOA) were adopted to observe indexes of the symptoms and signs: the 4-grade criteria for the lumbar pain, pain and numbness of the lower limbs, and the walking ability; and the 3-grade criteria for the straight leg raising (SLR), sensation, myodynamia, turning over the body during sleep, standing up, face-washing, forward bending, long-time sitting, heavy-thing carrying, and walking. The evaluations were done before treatment and after each of the 4 treatments. For each of the evaluations, the poorest score was 0, and the highest score was 2 or 3. The total full score was 29. The total evaluation result was expressed by the improving rate. The calculating method for improving rate: Improving rate = (the score after treatment – the score before treatment) / (29 – the score before treatment) × 100%. For the excellent result, the improving rate should be over 80%; 65%–80% for the good result; 50%–64% for improvement; and less than 50% for failure.

The statistical analysis

The data obtained were processed by the SPSS13.0 software. The $\chi^2$ test was used for the enumeration data, and the normal distribution measurement data were expressed as mean ± standard deviation ($\bar{x}$ ±s). The paired $t$ test was used for the sample mean, and the paired rank test of non-parametric statistics for skew distribution measurement data, with $P<0.05$ denoting a statistically significant difference.

RESULTS

After treatment, this group of patients had their JOA scores obviously raised as compared with the scores before treatment. Before treatment, the score was 11.79±6.38 ($\bar{x}$ ±s), and after treatment it was 22.31±5.13, showing a significant difference by the paired $t$ test ($P<0.05$).

The JOA improving rate was over 80% in 32 cases (32%); 50%–64% in 33 cases (33%); and lower than 50% in 3 cases (3%). The sum of the excellent and good rates was 64%, and the total effective rate was 97%. The paired rank test on the self-evaluation scores by the patients for severity of pain with VAS evaluation method showed statistical significance ($P<0.05$).

Statistical analyses were also done by the paired rank test for the 13 indexes under observation. The results showed that all the scores after treatment were significantly higher than those before treatment ($P<0.05$), see the following table.

<table>
<thead>
<tr>
<th>Symptoms &amp; signs</th>
<th>JOA score ($\bar{x}$ ±s)</th>
<th>Median (Md)</th>
<th>Interval of quartile (QR)</th>
<th>Rank test</th>
<th>$P$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bef. treat</td>
<td>Aft. treat</td>
<td>Bef. treat</td>
<td>Aft. treat</td>
<td>Bef. treat</td>
</tr>
<tr>
<td>Lumbar pain</td>
<td>0.89±0.94</td>
<td>2.23±0.60</td>
<td>1.0</td>
<td>2.0</td>
<td>1</td>
</tr>
<tr>
<td>Lower-limb pain &amp; numbness</td>
<td>1.21±1.27</td>
<td>2.39±0.71</td>
<td>1.0</td>
<td>3.0</td>
<td>3</td>
</tr>
<tr>
<td>Walking ability</td>
<td>0.55±0.77</td>
<td>1.77±0.87</td>
<td>0.0</td>
<td>2.0</td>
<td>1</td>
</tr>
<tr>
<td>SLR</td>
<td>1.13±0.73</td>
<td>1.50±0.60</td>
<td>1.0</td>
<td>2.0</td>
<td>1</td>
</tr>
<tr>
<td>Sensation</td>
<td>0.88±0.95</td>
<td>1.54±0.59</td>
<td>0.0</td>
<td>2.0</td>
<td>2</td>
</tr>
<tr>
<td>Myodynamia</td>
<td>1.26±0.81</td>
<td>1.61±0.57</td>
<td>1.0</td>
<td>2.0</td>
<td>1</td>
</tr>
<tr>
<td>Turning over</td>
<td>0.68±0.84</td>
<td>1.65±0.52</td>
<td>0.0</td>
<td>2.0</td>
<td>1</td>
</tr>
<tr>
<td>Standing up</td>
<td>0.91±0.85</td>
<td>1.69±0.51</td>
<td>1.0</td>
<td>2.0</td>
<td>2</td>
</tr>
<tr>
<td>Face-washing</td>
<td>1.48±0.78</td>
<td>1.90±0.33</td>
<td>2.0</td>
<td>2.0</td>
<td>1</td>
</tr>
<tr>
<td>Forward bending</td>
<td>0.45±0.66</td>
<td>1.41±0.55</td>
<td>0.0</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>Long-time sitting</td>
<td>0.61±0.78</td>
<td>1.48±0.56</td>
<td>0.0</td>
<td>2.0</td>
<td>1</td>
</tr>
<tr>
<td>Heavy carrying</td>
<td>1.28±0.83</td>
<td>1.68±0.53</td>
<td>2.0</td>
<td>2.0</td>
<td>1</td>
</tr>
<tr>
<td>Walking</td>
<td>0.45±0.63</td>
<td>1.44±0.63</td>
<td>1.0</td>
<td>2.0</td>
<td>1</td>
</tr>
</tbody>
</table>
Most of the patients had aggravated lumbar and/or leg pain after the peridural injection, which would last 12–36 hours if with no any measurement take. Only 3 cases in this series of patients were given oral administration of analgesics for relief of the pain. No spinal paralysis, peridural hemorrhage and nerve injury were found in all the patients.

**DISCUSSION**

After PLID, various factors such as mechanical pressure, inflammatory stimulation and tissue adhesion may cause expansion, congestion, or even thrombosis of the venous plexus in the tube of nerve root, quickly lead to edema of the nerve root. 3-5 And the nervous congestion and exudation may caused decrease of blood flow and the ischemic damage of local nerve tissues.

In this series, 100 PLID patients were treated by peridural injection with the compatible use of Mailuoning injection, 2% lidocaine and 5% sodium bicarbonate (called MCL). Mailuoning injection is the medicine used for thrombotic angitis, cerebral thrombosis and its sequelae. Its effective components are chlorogenic acid, scoparone and coumarin, 6 with the effects of dilating the blood vessels, improving micro-circulation, raising fibrinolytic activity, lowering the content of fibrinogen, decreasing blood viscosity, increasing volume of blood flow, anti-coagulation, and resolving thrombus. The PH value of this medicine is acidic, a single use of it may give strong stimulation to the local tissues, not beneficial to the absorption of inflammation; and it may cause pain. The compatible use of sodium bicarbonate and Mailuoning injection can not only decrease the medicinal stimulation to the local tissues, but also raise PH value of the epidural space, and decreasing acidosis of the spinal nerve root, with lidocaine used for alleviating pain and cutting down the vicious cycle of pain. Animal experiments have shown that injection of herbal preparation of Mailuoning into the epidural space does not cause pathological damage to the yellow ligament, dura mater of the spinal cord, the arachnoid, the spinal nerve root, and the spinal cord. 7 And the further researchs have demonstrated that MCL can promote the recovery of myelin sheath, Schwann’s cells and mitochondria of the inflammatory nerve root;8 and that peridural injection of MCL can obviously decrease the content of interneukin-6 in the serum of rats with nerve root inflammation. 9

After one course of the treatment for this group of patients, quite good therapeutic results have been obtained. The sum of excellent and good rats was 64%, with a total effective rate of 97%. And all the 13 indexes observed were obviously improved. It is suggested that peridural injection of MCL is an effective and safe therapy for PLID, and with shorter treating course, quicker therapeutic effects, and less suffering for the patients.

**REFERNECES**


(Translated by WANG Xin-zhong 王新中)