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Pathological Findings and Clinical Outcomes Study of 101 Fibromyalgia Patients Treated by Quadrant Pain Intervention

Johann A. Bauer
Associate Professor for Surgery at the Ludwig-Maximilians-University, Munich
Falkenweg 1, CH-6340 Baar (ZH), Switzerland
Office@fms-bauer.ch

A study of 101 consecutive FMS patients treated between March 2004 and June 2004 by Quadrant Pain Intervention (QPI) was recently completed.

**Patient Data**

Ninety-two of the 101 Fibromyalgia operated patients, with whom samplings were taken to the patho-histology examination, could be subjected the examination of the result-quality 3 months, 6 months and 12 months postoperative.

Of the patients, 82 were female and 10 were male, aged 51 ± 10 years. Females age were 52.6 ± 9.6 years, males 43.1 ± 11 years. All were physician diagnosed with fibromyalgia syndrome (73 of them by extern doctors) and all fully met the American College of Rheumatology classification criteria for FMS (ACR 1990). The mean chronicity for these patients was 15.9 ± 10.2 years.

All had complaints of generalised soft tissue pain, disturbed and non-restorative sleep, cognitive clouding, and persistent fatigue.

Other problems included (several answers were possible):

- Upper quadrant: cervical spine and thoracic vertebral column pain (92), shoulder/arm pain (79), occiput pains (80), migraine (42), tinnitus (57), facial/ teeth/ jaw pain (80), radiant pain emittance into the fingers (83), strengthless hands (85), heart/lung [breathing complaints] (62), neurological symptoms [tingling, stinging] (89), orofacial syndrome/trigeminus (55), other complaints (3).

- Lower quadrant: dorsum/sacral region pain (86), os coxae [hip] pain (66), knee complaints (75), restless legs (42), difficulties walking up the stairs (75), neurological symptoms [tingling, crampus syndrome] (77), inguen [groin] pain (47), meteorism [tymanites], irritable bowel syndrome (75), irritable bladder (66), high consumption of pain medicines (92), other complaints (1).

**Intake Assessment**

At intake all patients were seen for an intake and medical history interview (90 minutes) and all patients completed a self-report questionnaire and symptom check list. All patients were seen by the surgeon for an examination that included palpation of the ACR-defined 18 tender point locations as well of the acupuncture points all over the body as potential tender points. A map of tender points all over the body was performed for every patient.

All patients were provided with a complete rheumatological and neurological examination provided by other medical doctors before intake in our study.

On physical examination, all patients fully met the ACR (1990) classification criteria for FMS with a minimum of 11 positive tender points.

**Therapy**

All 101 patients underwent a quadrant intervention in the described manner

(1–6) at the right (53) or left (47) forearm and leg (2). During the operation the cover part compressing the nerves, arteries, and veins corresponding to the well known acupuncture points Li 6, 7, 8, 9, 10, 11 and Lu 5, 6 (upper quadrant) or Ki 3, 4, 5, 6, 7, 8, 9 and Spleen/ Pancreas 6 (quadrant below) was taken off and stored in 5% formaline for histology.

**Histological findings**

The analysis of all 101 specimen were performed at the Institute for Pathology of the Clinic Munich-North (Schwabing) associated to the Medical School of the University of Munich.

**Results**

Typical specimen reports are shown in fig 1. and fig. 2.
Formulation of questions:

■ Is that a thesaurosis?
■ Is there any evidence of micro-trauma?
■ Is that the case of a chronic progressive local-focal tissue alteration?

Number of examined samples:

Tissue samples from 101 patients were examined. The results are shown on Fig. 3 and Fig. 4. In the annex, pictures of histological preparations are presented.

Discussion with respect to the histopathological results

Neither thesauroses, nor micro-traumas could be found.

The changes exclusively affected tendon and muscle tissue as well as nerve fibers. This proves that the denomination ‘fibro-my-algia’ was chosen appropriately (Fig. 3).

In the forefront of all findings there is evidently fibrosis, which in its mostly marked expression appears under the form of cuffs. It is the sequel of a focal inflammation, which could be identified in a few cases. As the fibrosis proceeds, the inflammatory infiltration regresses. The inflammation heals forming a scar. It was surprising that in only two cases the presence of a ferrous pigment (haemosiderin deposits) could be found by the relevant special staining. Therefore, repeated micro-trauma may not play a role in the aetiology and pathogenesis of fibromyalgia.

The hyalinosis should be interpreted as degenerative change of col-
lagen in which the collagenous fibres firmly conglutinate. This is a late sequel, just as mucoid degeneration.

Congophilic deposits would correspond to amyloid. It was searched for in all cases by Congo-red staining but it wasn’t found. The inclusions of peripheral nerve fibres in the cicatrization tissue may very well be the cause of fibromyalgia development, and above all of its persistence. The identification of nerve fibres was done by means of immunohistological methods (see Annex).

Summarizing, fibromyalgia is initially an inflammatory process that heals developing an increasing cicatricial fibrosis. Taking the history, still other additional information regarding causative pathological implications can be detected (e.g. excessive stress at sports, physical stress, and great misfortunes).

These findings show that local damage to the nervous system may slowly develop far-reaching anti-regulatory, in part also pathophysiological sequences of events.

This knowledge has not been utilized so far for the treatment of pain in nerve damage.

The present application of this knowledge to clinical observations regarding fibromyalgia led to the working hypothesis that damage in the periphery of the nociceptive axis is the cause of its poikilomorphic manifestations.

Conclusions of the histopathological findings:
It’s somatic!
The review of all 101 specimens & histological findings
Histological findings
(Prof. Dr. med. Karl-Heinz Wurster)
The numbers relate to the amount of entries, 542 in all with 101 samples/patients.

Fig. 3: Results graph

Clinical outcomes all operated patients which were reached (n=92)
92 of the 101 because of Fibromyalgia operated patients, with whom samplings were taken to the patho-histology examination had a following (Fig. 5). The result quality 3 months, 6 months and 12 months after the intervention could be examined.

The number of 92 of 101 represents an excellent effectiveness of the study-organization. With such result-oriented studies, it is considered as good valid quota, if from 100 already treated patients 60 are reached.

Histological findings (Prof. Dr. med. Karl-Heinz Wurster)
Material to be examined
Patients operated upon for fibromyalgia, n = 101
One sample from each patient was examined using multiple staining. The described changes are multiple entries.

Formulation of questions
- Is that a thersaurismosis?
- Is there any evidence of micro-traumata?
- Is it the case of a chronic progressive local-focal tissue alteration?

Results
Amount of entries in n = 101 samples/patients

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyalinized tendon tissue</td>
<td>101</td>
</tr>
<tr>
<td>Reticular, peritendinous, perimysial fibrosis</td>
<td>85</td>
</tr>
<tr>
<td>Streaked mucoid degeneration</td>
<td>65</td>
</tr>
<tr>
<td>Isolated necroses</td>
<td>24</td>
</tr>
<tr>
<td>Connective tissue with plenty of fibres</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>278</td>
</tr>
<tr>
<td>Striated muscle tissue</td>
<td>101</td>
</tr>
<tr>
<td>Vacancy lipomatosis</td>
<td>32</td>
</tr>
<tr>
<td>Fibrosis encroaching on muscle tissue</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>169</td>
</tr>
<tr>
<td>Enclosures of peripheral nerve fibres</td>
<td>49</td>
</tr>
<tr>
<td>perineural mucoid degeneration</td>
<td></td>
</tr>
<tr>
<td>Focal chronic peritendinous inflammation, peritendinous cuff-like fibrosis</td>
<td>22</td>
</tr>
<tr>
<td>Focal enhanced vascularization</td>
<td>14</td>
</tr>
<tr>
<td>Lymphocytic infiltration</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>98</td>
</tr>
<tr>
<td>Acid mucopolysaccharides</td>
<td>3</td>
</tr>
<tr>
<td>Congophilic substances (amyloid)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Micro-traumata</td>
<td></td>
</tr>
<tr>
<td>Haemosiderin deposits</td>
<td>2</td>
</tr>
</tbody>
</table>

Short summary and evaluation
The presented samples show a focal, local inflammatory and degenerative disease process in which structures like nerve, tendon, and muscle fibres are cuff-like enclosed. The perineural inflammation is hereby confirmed. Thersaurismoses and micro-traumata are excluded.

Fig. 4: Histological findings
3 months pOP, amount of the operated upon  n = 92

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>3</td>
<td>No complaints (Code 1-1.5)</td>
</tr>
<tr>
<td>61</td>
<td>3</td>
<td>Improvement (Code 2-2.5)</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>No improvement (Code 3-3.5)</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Cannot say (4)</td>
</tr>
<tr>
<td></td>
<td>Total (n=absolute number)</td>
<td>92</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2-2.5 in %</td>
<td>69.57%</td>
</tr>
<tr>
<td></td>
<td>3-3.5 in %</td>
<td>6.52%</td>
</tr>
<tr>
<td></td>
<td>4 in %</td>
<td>2.17%</td>
</tr>
<tr>
<td></td>
<td>Total (in percents)</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

6 months pOP, amount of the operated upon  n = 92

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>3</td>
<td>No complaints (Code 1-1.5)</td>
</tr>
<tr>
<td>48</td>
<td>1</td>
<td>Improvement (Code 2-2.5)</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>No improvement (Code 3-3.5)</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Cannot say (4)</td>
</tr>
<tr>
<td></td>
<td>Total (n=absolute number)</td>
<td>92</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5 in %</td>
<td>23.91%</td>
</tr>
<tr>
<td></td>
<td>2-2.5 in %</td>
<td>53.26%</td>
</tr>
<tr>
<td></td>
<td>3-3.5 in %</td>
<td>22.83%</td>
</tr>
<tr>
<td></td>
<td>4 in %</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Total (in percents)</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

12 months pOP, amount of the operated upon  n = 92

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>0</td>
<td>No complaints (Code 1-1.5)</td>
</tr>
<tr>
<td>41</td>
<td>1</td>
<td>Improvement (Code 2-2.5)</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>No improvement (Code 3-3.5)</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Cannot say (4)</td>
</tr>
<tr>
<td></td>
<td>Total (n=absolute number)</td>
<td>92</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5 in %</td>
<td>44.57%</td>
</tr>
<tr>
<td></td>
<td>2-2.5 in %</td>
<td>45.65%</td>
</tr>
<tr>
<td></td>
<td>3-3.5 in %</td>
<td>2.17%</td>
</tr>
<tr>
<td></td>
<td>4 in %</td>
<td>7.61%</td>
</tr>
<tr>
<td></td>
<td>Total (in percents)</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Fig. 5: The result quality 3 months, 6 months and 12 months after the intervention

Summary

The success of the operative treatment of fibromyalgia has been proven.

In severe cases (30% of all patients) it is necessary to operate more than once. However, among the patients operated upon up to now, it has been necessary in only 6% to operate four times, i.e. upon all four quadrants.

Conclusions

1. Acupuncture points are morphologically (anatomically) defined nerve exit points, or nerve transit channels.

2. They may be affected by local inflammation accompanied by the formation of fibrotic boards leading to the compression of nerves and to regulatory disorders manifesting themselves as somatic disorders.

3. It is possible to approach the diseased areas morphologically—surgically, and to restore normal anatomic conditions by operation.

4. With a delay of weeks, months, maybe a year (or even longer, depending on pain memory) the normalized anatomy is followed by normalization of functions, leading to regression of somatic disorders up to their lasting absence. (It must be reminded: In neurosurgery regarding peripheral nerves, restitution of damaged nerves lasts 4 to 30 months).

The sequentialities documented by histopathological findings lead to completely new views in medical teaching with respect to medicine of the Far East: The medicine of the Far East is placed upon the anatomic, morphologic basis of Western anatomy, and hereby becomes accessible to the medical teacher. Synthesis of East and West yields a new medical conception of the world.
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(6) Bauer, J. "A New Method of Diagnosis and Therapy of Fibromyalgia Syndrome (FMS), Surgical Procedures a Cure for Intractable Fibromyalgia Syndrome of Long Duration". Myopain 04, Munich, July 18.-22., 2004

---

Legend:
Code 1 = no complaints
Code 2 = improved
Code 3 = no improvement
Code 4 = cannot say/not attainable, etc.

Fig. 6: Diagrams 3, 6 and 12 months after one intervention
Annex: Choice of immunohistological samples (Prof. Dr. Wurster)

Fig. 1: Inflammation. Hyalinosis of tendon tissue (HE)

Fig. 2: Hyalinosis and oedema (HE).

Fig. 3: Fibrosis irradiating into muscle tissue (van Gieson).

Fig. 4: Vacancy lipomatosis of muscle tissue (HE).

Fig. 5: Inclusion of nerve fibres (Immunohistological evidence)