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Kyoto University
Significance of the Referred Spasms of the Abdominal Wall Muscles during Visceral Pain

by

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Painful disorders in the abdominal organs provoke the referred spasms in abdominal muscles, mainly M. rectus abdominis.

We observed in 7 patients during laparatomy how the referred spasm participated in the appearance of the abdominal pain.

METHOD

Seven cases in the table were laparatomyed in the orthodox incisions with local anesthesia.

Painful complaints produced with local injection of 2.5% acetylcholine in the intestinal wall or traction of the mesenterium and others were observed.

And then, the abdominal walls were anesthetized in the ways illustrated in the figure 1 (A or B). It was observed beside the previous what complaints were produced with the same stimulations.

One per cent xylocaine was used in all cases. Some were premedicated with Opystan (pethidine). All seemed to be rid of an excess of fear before operation by elucidation of pain and others.

RESULTS

Results were summarized in the table 1.

Acetylcholine injection or the traction produced nausea, uncomfortable feeling beyond comparison and pain in the epigastrium, near the navel or the whole abdomen.

After the hemilateral anesthesia, all complaints seemed to be lightened and pain was lateralized in the opposite side. In the cases of the bilateral anesthesia, local signs of pain disappeared and other complaints diminished.

The same stimulation produced various intensities of pain according to the case. Premedication or elucidation on pain for conciliation of the patients no doubt lightened the complaint.
Table 1. 7 cases of gastrointestinal operation with abdominal somatic nerve block

<table>
<thead>
<tr>
<th>Anaesthesia &amp; Operation</th>
<th>Traction</th>
<th>Application of Ach</th>
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<tbody>
<tr>
<td>block B with Opystan</td>
<td>These procedures to gastric wall cause only traction sensation without localisation, nausea and fear.</td>
<td></td>
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<tr>
<td>Laparatomy with median incision</td>
<td>Traction sensation with slight pain in upper median No nausea</td>
<td>Traction sensation in upper median</td>
</tr>
<tr>
<td>block B with Opystan</td>
<td>Traction sensation with slight pain in l-epigastrum</td>
<td></td>
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<tr>
<td>Appendectomy</td>
<td>Nausea</td>
<td></td>
</tr>
<tr>
<td>block A with Opystan</td>
<td>Traction sensation with slight pain in l-epigastrum</td>
<td></td>
</tr>
<tr>
<td>Appendectomy</td>
<td>L-epigastralgia</td>
<td>Traction sensation with slight l-epigastralgia</td>
</tr>
<tr>
<td>block B</td>
<td>Traction of net causes no complaint</td>
<td></td>
</tr>
<tr>
<td>Appendectomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>block A</td>
<td>L-epigastralgia with nausea and fear</td>
<td></td>
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<td>Appendectomy</td>
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COMMENTS

There is no harmless method for producing of visceral pain but the intestinal stimulation (or gastric) with acetylcholine injection or traction.

So, here is observed a character of mesenteric sensation as an example of visceral sensation.

Kimura C. pointed out the importance of visceral sensation in abdominal pain.

Seto H. suggested that there were the receptors of abdominal pain in the abdominal wall and Davis L. & L. J. Pollack said the original visceral sensation was referred to the abdominal wall, from where abdominal pain ascended centrally. However, the referred spasms of the abdominal muscles have been usually considered only as a local sign of visceral pain.

Our experiment showed, the abdominal pain caused from the intestinal (or gastric) stimulation consisted of the original visceral sensation and the referred spasms. The referred spasm, that is to say, modified the nature and the intensity of the original visceral sensation and gave the local sign.

It is suggested the referred spasms in the abdominal wall muscles give painful characters, local signs, nausea and others, to the original visceral sensation—uncomforts beyond comparison, fear and traction sensation.

SUMMARY

With 7 patients laparatomied under local anesthesia, it was observed how the abdominal wall nerve block transfigured complaints produced with acetylcholine injection into
the intestinal (or gastric) wall or traction of the organs.

Hemilaterial abdominal wall nerve block brought lateralisation of pain in the opposite side and lightened all complaints.

Bilateral block brought uncomfortable feeling beyond description or traction sensation without local sign, not painful complaints.

It is considered visceral pain consisted of original visceral sensation producing un-comforts, fear and traction sensation, and of the refered spasms in the abdominal muscles producing so called pain, local sign and perhaps participating in vomiting.

(Presented before at the Symposium on Pain of the 24th Annual Meeting of the Japan Neurosurgical Society, Tokyo, 1965.)

REFERENCES


和文抄録

腹痛における腹筋の関連経帯の意義

京都大学医学部外科第二講座（指導：木村忠司教授）

熊 田 馨・恒 川 謙 吾・町 塚 昭

虫垂切除術・試験開腹術・鼠蹊ヘルニア形成術の7例について、局所麻酔下に開腹が行われ、胃腸素の牽引2.5%アセチールコリン胃腸管膜下注入による腹痛が観察された。次いで、右腹壁神経遮断・両側同遮断後の同様刺激による愁訴の変化が観察された。

右側遮断によっては、愁訴は若干減弱し、痛み等は左側に陥局し、両側遮断によれば痛みは名状し難い不快感・牵引感にかわりいずれも部位感が消失する。更に両側遮断では悪心嘔吐がみとめ難い。

これによって腸管痛などの腹痛は部位感のない不快・牵引感をもたらす内臓知覚と、体性知覚に顕著な痛み、悪心・嘔吐・部位感などをもたらす致癌関連経帯ととの合成された感じであることがうかがわれる。