Title

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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 laparotomy how the referred spasm participated in the appearance of the abdominal pain.

METHOD

Seven cases in the table were laparatomied 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>
</tr>
</thead>
<tbody>
<tr>
<td>block B with Opystan</td>
<td>Traction sensation with slight pain in upper median</td>
<td>Traction sensation in upper median</td>
</tr>
<tr>
<td>Laparatomy with median incision</td>
<td>No 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>Nausea</td>
<td></td>
</tr>
<tr>
<td>block B</td>
<td>Traction sensation with slight pain in l-epigastrum</td>
<td></td>
</tr>
<tr>
<td>Appendectomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>block A</td>
<td>L-epigastralgia</td>
<td>Traction sensation with slight l-epigastralgia</td>
</tr>
<tr>
<td>Appendectomy</td>
<td>Vomiting</td>
<td></td>
</tr>
<tr>
<td>block B</td>
<td>Traction of net causes no complaint</td>
<td></td>
</tr>
<tr>
<td>r-hernioplasty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>block A</td>
<td>L-epigastralgia with nausea and fear</td>
<td></td>
</tr>
<tr>
<td>Appendectomy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

Hemilateral 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 uncomfortable, fear and traction sensation, and of the referred spasm 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