Clinicopathological study of Parkinson's disease with ischemic enteritis due to intractable constipation

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Introduction

Parkinson's disease is a progressive neurodegenerative disease characterized clinically by rest tremor, rigidity, bradykinesia, and postural instability. Parkinson's disease affects the central nervous system and peripheral autonomic neurons. We report on a case of Parkinson's disease with ischemic enteritis due to reducing bowel peristalsis, which caused ileus, and gut distention by bowel sympathetic nerve degeneration.

Case: 83-year-old woman

[Chief complaint] Abdominal pain

[Medical history]

60-year-old: She was diagnosed Parkinson's disease.
82-year-old: She couldn't walk because of frozen gait and orthostatic hypotension after the operation of lumbar spinal canal stenosis.
83-year-old: She developed an ileus and died. We experienced the case who died from ischemic colitis which was led by high colonic pressure. Insufficient stool over two weeks might have caused an upregulation of the inner pressure of colon.

[Past history] caesarean section

Medication] senna 577.9mg, panethine 600mg, levodopa/carbidopa 300mg, ropinirole 8mg, entacapone 300mg, istradefylline 20mg, Ameji 82mg, apixaban 5mg, gabapentin ena hydrocarbyl 300mg, rabeprozole10mg.

[Family history-life history] no special instruction

Physical findings

- Vital signs-Consciousness: GCS 15(E4V5M6), Blood pressure: 101/47mmHg, Pulse rate: 74 bpm, Body temperature: 35.2°C, Respiratory rate: 19/min, SpO2: 96%(room air)
- Head and neck- Conjunctivae: no anemia and jaundice
- Thorax- Heart: no murmur, Lung: no rales
- Abdomen- Lower abdominal bloating was observed. Her bowel sound was weak. She had epigastric tenderness, no spontaneous pain and peritoneal irritation sign.
- Extremities- cold foot, no edema

Neurological findings: movement: move by herself, no rigidity and thrill, walk: couldn't assess

[Laboratory data]

Complete blood count: WBC 20200/μl (Neut 84.2 %), Hgb 10.3 g/dl, Plt 25.4 × 10^4 μl
Serum chemistry
TP 6.7 g/dl, Alb 3.4 g/dl, AST 33 U/L, ALT 7 U/L, LDH 297 U/L, CK 465 U/l, Na 148 mEq/l, K 3.7 mEq/l, Glu 86 mg/dl, CRP 5.4 mg/dl, PCT 20.64 ng/ml, eGFR 17 ml/min/1.73M²
Coagulation system
PT- INR 1.63, APTT 37.8 sec., Fib 223.4 mg/dl, D-dimer 1.5 mg/ml
Venous blood gas analysis: pH 7.354, pCO₂ 37.2 mmHg, HCO₃ 26.7 mmHg, HCO₂ 20.2 mmol/l, cLac 5.3 mg/dl, Urine Protein 3+, WBC 3+ (>100HPF), Bacteria 2+ (1.1 × 10⁹)

[Functional findings]

Movement: move by herself, no rigidity and thrill, walk: couldn't assess

[Diagnostic imaging]

Non-contrast CT scan revealed gut distention from the sigmoid colon to small intestine (Fig. 1A). The restiform body (arrow) made the sigmoid colon narrow (Fig. 1A). Gut distention was already observed by X-ray at the age of 77(Fig. 1B).

[Pathological findings]

A 4 Macroscopic and microscopic findings of the sigmoid colon stenosis

except ulcer lesion of sigmoid colon

Strangulated lesion

ulcer in descending colon

Hemorrhagic necrosis in mucosal layer became rampant without mucous ulcer (Fig. 4B). Inflammatory cell infiltrated in all layers in mucous ulcer lesion (Fig. 4C). No inflammatory cells in the sigmoid colon (Fig. 4A). No obstruction of superior and inferior mesenteric artery.

Clinical course

MEPM 0.5g

CS

ECF (m/h)

BP(mHg)

HR(bpm)

BP was not detectable

RR(mmHr)

BT(℃)

anurea

80

144

35.5

34.5

36.5

Fig. 3 Clinical course from her hospitalization to her death

NA: noradrenalin, Lac: lactic acid, CS: colonoscopy, MEPM: meropenem, ECF: extra cellular fluid

[Colonoscopy]

No mucosal ulcer from the anal side of the stenosis to the rectum (Fig. 2A). Sigmoid colon was constricted mildly enough to pass the scope (Fig. 2B). Mucosal ulcer exited from the oral side of the stenosis to the descending colon (Fig. 2C).

[Sympathetic nerve degeneration]

Table. Distribution of ischemia, nerve degeneration, and Lewy bodies

<table>
<thead>
<tr>
<th>Ischemic colitis</th>
<th>nerve Degeneration</th>
<th>Lewy Body (stained by H.E.)</th>
<th>Lewy Body (immunohistochemical study)</th>
</tr>
</thead>
<tbody>
<tr>
<td>esophagus</td>
<td>±</td>
<td>±</td>
<td>+++</td>
</tr>
<tr>
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<td>±</td>
<td>±</td>
<td>±</td>
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<td>ileum</td>
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</tr>
<tr>
<td>rectum</td>
<td>±</td>
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<td>±±±</td>
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</tbody>
</table>

Fig. 5 Lewy bodies and Lewy neurites

(Lewy body, arrow and Lewy neurite, arrow head at esophagus)

Fig. 6 Sympathetic nerve degeneration

(plexus, circle, and degenerated sympathetic nerve, circle at colon)

[This case...]

- We experienced the case who died from ischemic colitis which was led by high colonic pressure. Insufficient stool over two weeks might have caused an upregulation of the inner pressure of colon.
- Constipation with Parkinson's disease can lead to death and thus prevention is vital.

Conclusion

- We experienced the case who died from ischemic colitis which was led by high colonic pressure. Insufficient stool over two weeks might have caused an upregulation of the inner pressure of colon.
- Constipation with Parkinson's disease can lead to death and thus prevention is vital.