CASE REPORT

Phytobezoar and duodenal ulcer as complication of Duodopa therapy in a patient affected by Parkinson's disease

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Accepted 11 June 2018

SUMMARY

Continuous duodenal infusion of levodopa/carbidopa intestinal gel (LCIG) is an established treatment to control motor fluctuations in Parkinson's disease. Duodenal infusion allows a steady absorption of the drug in the small bowel, reducing plasmatic fluctuations of levodopa. Some complications may occur during the treatment, often related to intrajejunal percutaneous endoscopic gastrostomy (PEG-J). We report a case of duodenal ulcer associated with a phytobezoar involving the end of jejunal probe, in a patient who underwent PEG-J for LCIG infusion. In the last 2 weeks, the patient suffered from abdominal pain and dyspepsia. Oesophagogastroduodenoscopy showed an ulcerative lesion of the duodenum due to traction of the jejunal tube; the end of the jejunal tube was wrapped in a phytobezoar. This case is interesting because of the extension of the ulcerative lesion due to PEG-J dislocation and because of the subtle symptoms associated with it.

providing continuous dopaminergic stimulation, is crucial in the treatment of motor fluctuations in patients with advanced PD.³ Intrajejunal administration of levodopa/carbidopa also avoids diet-related competition for intestinal uptake mechanisms.¹ The frequency of complications of LCIG is high and varies between 13% and 70%.¹ According to the study published by Devos *et al*, complications are divided in gastrostomy-related, infusion system-related and drug-related.⁵ We report a case of a duodenal ulcer associated with a phytobezoar involving the jejunal probe in a patient who underwent PEG-J for LCIG infusion in 2016. This complication is reported in the literature, but it is extremely rare.⁵ The case is of particular concern because of the presence of subtle symptoms that could have facilitated an underestimation of the severity of the complication, in the absence of the correct diagnostic approach.

BACKGROUND

Continuous infusion of levodopa/carbidopa intestinal gel (LCIG) is an established treatment to control motor fluctuations in advanced Parkinson's disease (PD).¹ LCIG consists of a suspension of levodopa (20 mg/mL) and carbidopa (5 mg/mL), delivered directly in the jejunum through an intrajejunal percutaneous endoscopic gastrostomy (PEG-J) with a jejunal tube. Oral treatment with levodopa and dopamine agonists is the main treatment in the initial phase of PD, but over time, the duration of the response to treatment becomes shorter and side effects are more pronounced.² Frequent complications seen in patients receiving long-term oral levodopa treatment are motor fluctuations, including dyskinesia, wearing off, on/off phenomena and freezing. These complications seriously affect the quality of life of patients. The motor and non-motor fluctuations are linked to the fluctuating levodopa plasma concentrations resulting from levodopa's short half-life.³ In addition, PD also involves gastrointestinal motility and slows down absorption in the stomach, affecting oral levodopa absorption and causing inconstant plasma drug levels. Intestinal infusion allows a steady absorption of levodopa directly in the small bowel, bypassing the stomach and reducing motor fluctuations.⁴ Hence, continuous drug delivery,

CASE PRESENTATION

The patient, a 70-year-old man, was affected by PD at stage III of Hoehn and Yahr scale. The history of pathology started in 2006. He experienced severely disabling motor fluctuations, with wearing off, unpredictable off periods and frequent freezing, sometimes associated with falls. Treatment with LCIG was started in March 2016. There were no complications during the surgical procedure and in the postprocedural days. The patient had an excellent clinical response, with improvement in activities of daily living (ADL) and instrumental activity of daily living (IADL), decreasing of rigidity and related pain and marked reduction of the off time during the day. The frequency of freezing episodes also decreased. After 6 months since gastrostomy, he presented with a fissure of the outer tube. PEG-J was replaced (EndoVive 15Fr PEG device and EndoVive 9 Fr through the Peg Jejunal Feeding Tube, Boston Scientific) and he continued the treatment without other complications.

In medical history, the subject reported vertebral surgery for spinal disc herniation in 2005, benign prostatic hyperplasia since 2010 and a diagnosis of polymyalgia rheumatica in 2016.

The patient was admitted in neurology unit in April 2017, for abdominal pain, dyspepsia and constipation. The symptoms started 2 weeks before. He also had worsening of the motor status since about a month, with increasing of

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To cite: Cerrone P, Marchese M, Pistoia MA, *et al*. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2017-223884

Figure 1 Oesophagogastroduodenoscopy showing duodenal ulcer due to traction of the jejunal probe.

axial rigidity and more frequent freezing episodes. At admission, blood tests showed mild normocytic anaemia (haemoglobin: 11.9 g/dL, mean corpuscular volume (MCV): 84 fL) and moderately high values of phlogosis indices (erythrocyte sedimentation rate (ESR): 41 mm/h, C-reactive protein (CRP): 5.7 mg/L). On the day of admission, the patient underwent an abdominal radiography (RX) scan with contrast, introduced by PEG-J, that showed a dislocation of the jejunal tube in the small bowel. The examination was completed with a CT scan. There were no signs of pneumoperitoneum or accumulation of fluid in the abdomen. Oesophagogastroduodenoscopy (OGDS) showed a bezoar enveloping the distal extremity of the tube, associated with an ulcerative lesion extended in the bulb and the second part of duodenum due to traction and decubitus of the jejunal tube (figures 1–3). The patient was treated with endoscopic removal of the jejunal tube and bezoar, and with intravenous pantoprazole 40 mg three times a day. Gastric tube was left in place. Histological examination of the ulcer revealed cells with normal architecture and presence of fibrin and granulocytes.

OUTCOME AND FOLLOW-UP

After a month, an EGDS was performed which showed a complete healing of the wound (figure 4). However, a severe deformation of pylorus causing mild duodenogastric bile reflux was observed. This situation led to the decision to discontinue duodenal infusion permanently. PD treatment was continued with gastric infusion of levodopa/carbidopa through gastric tube and with transdermal rotigotine. It was necessary to increase the dose of levodopa/carbidopa to reach the motor status the patient had before the complication.

DISCUSSION

LCIG represents a valid therapeutic choice in patients with advanced PD, to reduce levodopa-associated motor complications and to improve the quality of life. Early studies with LCIG demonstrated that there was a reduction in ‘off’ time without worsening of dyskinesia and an increase in ‘on’ time without troublesome dyskinesia.^{4–7}

Significant improvements in the total Unified Parkinson's Disease Rating Scale (UPDRS) IV (motor complications) score were observed in several studies.^{8–13}

Figure 2 The lesion involves pylorus.

Figure 3 Phytobezoar after removal.

While there are many published studies evaluating the impact of LCIG on motor symptoms, there is a relative lack of data on non-motor symptoms (NMS). Several observational and retrospective studies reported improvements in various NMS domains.^{9 14}

In addition to symptom control, improvement in Quality of Life (QoL) measures, including the PDQ-39, have been reported

Figure 4 Oesophagogastroduodenoscopy after a month showing complete resolution of the duodenal ulcer.

Learning points

- ▶ Continuous duodenal infusion of levodopa/carbidopa is a valid therapeutic choice in advanced Parkinson's disease, but complications are frequent.
- ▶ Decubitus duodenal ulcer is a rare complication of dislocation of jejunal tube. The presence of a phytobezoar in patients treated with this technique is also rare.
- ▶ If not promptly treated, adverse events can lead to hospitalisation or death of patients. Physicians should considerate the occurrence of complications, even if the patient has minor symptoms.

in patients treated with LCIG in small-scale studies and, more recently, in prospective studies.^{4 9 10 14}

Even if the efficacy of LCIG in advanced PD is unquestionable today, the rate of related adverse events is high (up to 94% in some studies).¹⁵ Fortunately, complications are often minor and do not lead to permanent discontinuation of treatment. Complications of LCIG include those related to gastrostomy, infusion system and drug. Complications related to the infusion system are the most frequent.¹ In a review published in 2017, Virhammar and Nyholm reported an incidence of serious adverse event of 11% in the maintenance period. Cases of dislocation of the jejunal tube are reported in the literature and affect about 2.3% of patients treated.¹⁵ Decubitus duodenal ulcer is a rare complication of dislocation of jejunal tube. Several cases of decubitus duodenal ulcer caused by jejunal tube traction are reported in the literature.^{10 12 16–21} The presence of a phytobezoar in patients treated with this technique is also rare.^{20–23} In our case, there was a traction of the tube that caused a decubitus in the duodenum with related ulcer. In addition, the distal extremity of the jejunal tube was trapped in a bezoar. If it had not been treated, the lesion would probably have evolved in a perforation. Bowel motility alteration, that is an important non-motor feature in patients with PD, probably played a main role in jejunal tube dislocation and in bezoar formation. Phytobezoar wrapped the end of the jejunal tube, so the mass contributed to the traction of jejunal tube and to decubitus in duodenum. Other factors, as incorrect PEG-J care procedures and inappropriate movements and tractions generated by the patient may have played a role in J-tube dislocation.²¹ Preventing phytobezoar formation may be important to avoid this kind of complications. Avoiding excessive consumption of foods rich in fibres, insufficient mastication and drugs which reduce gastrointestinal motility could be important in prevention.²⁴

Even though the adverse event resolved, pylorus deformation with duodenogastric bile reflux occurred, and it was decided to stop duodenal infusion, considering the high risk of complications. Even if there was no strong evidence in the literature, we decided to maintain gastric continuous infusion. In a pilot study conducted in 1988 on 10 patients and in a series of cases published in 2015, gastric continuous infusion of levodopa/carbidopa was a reasonable alternative treatment in patients who could not continue duodenal infusion.²⁵

The presence of abdominal pain, constipation and dyspepsia or other gastrointestinal symptoms should represent a red flag for the possible presence of a device-related adverse event. In this subgroup of patients, abdominal RX or CT to verify the proper placement of the jejunal tube is mandatory.

LCIG treatment in PD with motor complications is a valid choice. Complications related to the procedure, to infusion system or to drug are frequent. Most of these complications are minor, but in some cases, severe adverse events can occur. If not promptly treated, these events can lead to hospitalisation or death of patients. Treating neurologists should keep in mind the possible occurrence of severe complications when they see patients treated with LCIG in routine clinical visits. In fact, the risk of underestimating subtle symptoms which can hide a severe complication is real.

Contributors PC drafted the article. PC and MM acquired and interpreted data of the patient. CM was responsible for the conception and design of the manuscript. CM and MAP revised the manuscript critically.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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