Further improvement after 24-month treatment with teduglutide in a patient with active Crohn's disease and short bowel syndrome

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Dear Editor,

Treatment with the glucagon-like peptide 2 (GLP-2) analog teduglutide is generally associated with clinically significant reductions (≥20% from baseline) in the parenteral nutrition (PN) volume in adult patients with short bowel syndrome (SBS) (1,2). Teduglutide has demonstrated to be safe and well tolerated, leading to restoration of intestinal functional and structural integrity. On the other hand, adverse events related to hyperplastic and hypertrophic effects have also been reported (3). Thus, patients with SBS and with fluctuations in disease activity, for example, in active Crohn's disease (CD), have never been treated with teduglutide.

We report the updated results of 24-month rescue therapy with teduglutide (Revestive®, Shire) in a PN-dependent 43-year-old woman with severe SBS caused by multidrug-resistant active CD. Her medical history and encouraging results achieved after the first 12 months of treatment with teduglutide have been previously described (4).

Informed consent was obtained.

Treatment with 0.05 mg/kg/day of teduglutide was started in August 2015 when the patient was in a poor condition, had nutritional deficiency and electrolyte imbalance due to severe malabsorption syndrome, and was on 24 h/day and 7 days/week PN.

After 24 months of treatment, there was no reduction in days of PN/week, but the PN volume has been steadily reduced from 3000 mL/day to 2500 ml/day (almost 20% reduction) and total PN calories have been reduced from 1600 kcal/day to 1400 kcal/day.

In addition, the nutritional status and hydroelectrolyte balance further improved compared to the first twelve months of treatment. Body weight progressively increased (from 45 kg to 60.5 kg) and remained stable and the body mass index also progressively increased (from 17.5 kg/m^2 to 23.6 kg/m^2) and remained stable, denoting an important improvement in physical condition, which was severely compromised before starting treatment.

Significant improvement and good maintenance of serum nutritional indexes and electrolyte levels were also achieved (serum albumin level: from 2.7 g/dL to 3.5 g/dL; serum total protein level: 7.0 g/dL to 8.1 g/dL; Na level: from 122 mEq/L to 141 mEq/L; K level: from 2 mEq/L to 4.6 mEq/L). Liver function tests (AST and ALT, alkaline phosphatase, gamma-glutamyl transpeptidase), pancreatic enzymes (amylase and lipase), and creatinine had no significant alterations.

Crohn's disease inflammatory activity has been mainly monitored using Crohn's disease activity index, the values of which change from 421 (moderate-severe activity) to 173 (mild activity) (5). Ileoscopy through definitive ileostomy has not been performed since there were no sufficient indications (e.g. recurrent/new onset bowel disease, stoma complications, endoscopic therapy). Although accurate, endoscopic and histopathological examinations have been considered too invasive, time consuming, and expensive (6). C-reactive protein (CRP) levels have also been monitored as they correlate well with clinical, endoscopic, radiologic, and cross-sectional inflammatory ac-

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tivity markers in CD: CRP decreased from 4× upper limit of normal (ULN) to 1.5× ULN. However, a small and not significant increase in CRP levels has been commonly observed in recent studies about teduglutide (6). CD inflammatory complications and treatment side effects (intestinal obstruction, perforation, abscess, fistula, intestinal bleeding or dilatation, cancer) have been excluded by means of close imaging surveillance (Ultrasound, Computed Tomography Scan, Magnetic Resonance Imaging). Moreover, there were no new cases of hospitalization.

In conclusion, it has been confirmed that teduglutide had a key role in further improving the severe nutritional deficiencies of our patient as well as her quality of life. Moreover, clinical, serological, and imaging data showed a marked improvement in the CD-related inflammatory state. This may be due to the better nutritional status achieved as well as GLP-2 anti-inflammatory effects already observed in preclinical studies (decreased interleukin-1ß, interferon-γ, and tumor necrosis factor-α levels, along with reduced neutrophil activity) (7). If a specific anti-inflammatory effect in CD is confirmed in future studies, this can open an interesting field of discussion on inflammatory bowel diseases and other inflammatory disorders and their potential therapeutic approaches.

Though limited to a single severe case (the only one described in literature), our findings confirm and improve knowledge on the successful treatment of active CD with the GLP-2 analog teduglutide.

Informed Consent: Written informed consent was obtained from the patient who participated in this study.

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