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SCIENTIFIC LETTERS

Gastric ulcer related with gastrostomy feeding tube: Description of 3 cases and review of literature☆

Úlcera gástrica relacionada con sonda de gastrostomía: descripción de 3 casos y revisión de la bibliografía

Dear Editor,

Enteral nutrition through a percutaneous endoscopic gastrostomy (PEG) is currently common practice in our centers. This technique allows for a simple, safe and well tolerated feeding that guarantees correct patient nutrition over the long term.[1] Both immediate and late complications have been described following the placement of a PEG.[2] Gastric pressure ulcer is an infrequent late complication.[3] Pressure ulcers have been described in relation to PEG tube replacement with a type of tube in which the distal tip emerges from the balloon.[4,5] We describe the case of three patients in our center with upper digestive bleeding (UDB) secondary to gastric pressure ulcer caused by this type of tube.

The three patients (one woman and two men) were 71, 85 and 33 years of age. The PEGs were placed in 2008, 2013 and 2009, respectively. During this period of time a total of 210 PEGs were placed in Hospital Universitario de Cruces (Vizcaya, Spain). The first and third patients had functional dysphagia, while the second suffered from organic dysphagia. The first patient was receiving oral anticoagulants while the last was receiving antiplatelet medication. None of the patients were receiving nonsteroidal antiinflammatory drugs. All three patients initially received an 18 F gastrostomy tube. Following the protocol in our center, the initial tube was replaced after 6 months by another tube in which the distal tip emerges from the balloon.

The first UDB episode occurred 6, 3 and 7 years after the placement of the initial tube. The complication manifested as blood emerging from the PEG tube in the first patient, melena and abdominal pain in the second, and hematemesis in the third patient. Endoscopy in all three patients revealed a gastric ulcer against the balloon of the gastrostomy tube, and which corresponded to a pressure ulcer. The urease test, performed in two patients, was seen to be negative, and a biopsy was obtained that proved negative for malignancy. Only in the third patient was the gastrostomy tube replaced with another device that contained the distal tip within the balloon. The first two patients continued with the usual type of tube and again suffered UDB four months after the first episode.

Endoscopy in this case was only performed in the first patient, again revealing the presence of a gastric ulcer against the gastrostomy balloon, and which corresponded to a pressure ulcer. The histopathological study discarded malignancy. In both of these patients the gastrostomy tube was replaced with another device that contained the distal tip within the balloon.

Upper digestive bleeding secondary to pressure ulcer caused by a gastrostomy tube with the distal tip outside the balloon is a rare but serious complication.

Up until the year 2009, isolated cases were reported, characterized by gastric mucosal lesions with UDB. In 1997, Kazi et al.[6] reported 5 cases in children, Delatore and Boylan[7] described two cases in 2000, and Hsu et al.[8] presented another two cases in 2009. All of them were secondary to gastrostomy tubes with the distal tip protruding outside the balloon. Friction between the distal tip and the gastric wall with the stomach empty increases the intragastric pressure and gives rise to lesions and ulceration of the gastric mucosa.[6] The ulcers were located on the posterior wall, where the distal tip of the tube impacted against the gastric mucosa.[7] The last two cases[8] presented massive digestive bleeding associated with mucosal abrasion by the PEG tube.

The first series analyzing this complication in relation to tubes of this kind was a retrospective study published by Kanie et al. in 2002,[9] involving 92 patients. The authors found gastrostomy tubes with a long and protruding distal tip (>5 mm) to be related to the appearance of gastric ulcer in 33.3% of the cases versus only 2.8% in the cases of tubes with a short distal tip (<5 mm). Three of the 92 patients presented symptoms of digestive bleeding in relation to the ulcers.

A later prospective study by Teno et al. published in 2012 included 18,000 institutionalized patients with advanced-stage dementia. Those patients fitted with a PEG tube were seen to be 2.27 times more likely to develop pressure ulcers.[10]

In our center a total of 210 PEGs were placed between 2008 and 2013. We only documented 5 UDB episodes, corresponding to the three described patients. The first patient was receiving oral anticoagulants while the second was receiving antiplatelet medication. None of the patients were receiving nonsteroidal antiinflammatory drugs. In all three

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patients a pressure ulcer was identified against the PEG balloon. The histopathological study discarded malignancy, and no *Helicobacter* type bacteria were observed. Although the cases were few, the complication proved serious.

Pressure ulcers associated with tubes of this kind had already been previously described: initially in isolated cases, though they were followed by larger series in 2002 and 2012, which reflected a greater risk of gastric ulcer. Following the demonstration of a 2.27-fold increase in the risk of pressure ulcers, an evaluation of the patient series was made and the administrative procedures for the required changes were implemented.

It can be concluded that UDB secondary to a pressure ulcer caused by a gastrostomy tube with the distal tip outside the balloon is a rare but serious complication. Ensuring patient safety is a key consideration when choosing among the different types of enteral nutrition gastrostomy tubes.

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Analytical interference in the corticotropin immunoassay in patients with adrenal adenomas

Interferencia analítica en el inmunoensayo de corticotropina en pacientes con adenomas suprarrenales

Analytical interference in the corticotropin (ACTH) assay is an uncommon event (<1%).[1] However, when it occurs, it can interfere with the diagnostic orientation and management of adrenal disease leading to inappropriate clinical decisions, especially when patients show alterations in imaging tests.

Case #1

A 79-year-old woman was referred for a right adrenal mass (23 × 16 mm) incidentally discovered in a thoracic-abdominal CT scan performed after trauma. The patient had always had cats. She did not report tachycardia, palpitations, headaches or hyperhidrosis, and did not show any clinical sign of hypercortisolism. Hyperpigmentation was absent.

Hormone analysis showed marked hypercorticotropinemia (ACTH 242 pg/ml; normal range, *N*: 5–46) with serum cortisol (16.1 mcg/dl; *N*: 3.7–19.4), nighttime (23:00) salivary cortisol (0.1 mcg/dl; *N* < 0.28)], and 24-h urinary free cortisol (UFC, 40 mcg/24 h; *N*: <140) within the normal range. Mineralocorticoid function [aldosterone 4.4 ng/dl (*N*: 3–35.5), plasma renin activity, PRA 1.78 ng/ml/h (*N*: 0.3–7.0)] and medullary adrenal function [24-h urinary metanephrines 168 mcg/24 h (*N*: 50–825)] were also normal. A second plasma ACTH determination confirmed hypercorticotropinemia (ACTH 311 pg/ml).

The presence of hypercorticotropinemia with normal values of serum, urinary and night salivary cortisol in the absence of clinical adrenal dysfunction forced us to rule out ACTH dependent Cushing syndrome (ACTH-dependent CS) and Addison's disease. We performed a 1-mg dexamethasone (23:00 h) suppression test (serum cortisol 1.4 mcg/dl; *N* < 1.8) and a short ACTH (250 mcg iv) stimulation test (serum cortisol at 0, 30, and 60 min: 12.8, 21.3, and 23.3 mcg/dl). Antiadrenal antibodies were also negative. A normal pituitary MRI and a negative ^{99m}Tc-EDDA/HYNIC-TOC scintigraphy ruled out the presence of a silent