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Case Report
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Effectiveness of Plasma Argon in Esophageal Tumor Overgrowth Treated with Endoprosthesis

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Abstract

Esophageal cancer is one of the most aggressive neoplasms of the digestive tract, with high morbidity and mortality. According to histology, squamous cell carcinoma and adenocarcinoma are among the most common, constituting 90% of esophageal neoplasms. For patients with unresectable tumors, with the presence of metastasis or with medical contraindications to undergo surgery, with a survival of less than three months, there are several palliative therapies available in order to improve swallowing as much as possible, as well as placement of self-expanding metal esophageal stents to improve digestive transit in cases of stenosis and recurrence of dysphagia due to tumor overgrowth, which can be treated with ablation with argon plasma within the therapeutic endoscopic varieties. A case report is presented with the objective: to analyze the effectiveness of the use of argon plasma in esophageal tumor overload treated with endoprosthesis. The effectiveness of the APC application in the tumor growth was evaluated with a single session, the dysphagia was solved with a minimum of complications.

Keywords: Argon plasma ablation; Esophageal cancer; Self-expanding prostheses

Introduction

Esophageal cancer is one of the most aggressive neoplasms of the digestive tract, with high morbidity and mortality. It is considered as the eighth cause of death from tumors worldwide and the fifth in Cuba [1,2], with an increase in the age group of 60 to 79 years with 367 deaths and a rate of 40.9 per 100,000 inhabitants, followed by the larynx tumor. According to histology, squamous cell carcinoma and adenocarcinoma are the most common, constituting 90% of esophageal neoplasms.

The location of the esophageal tumor can extend from the proximal region to the heart and the risk factors are related to the modifiable ways and lifestyles in most cases, such as smoking, drinking alcoholic beverages, ingestion of food at extreme temperatures and other non-modifiable over which control over risk groups could be taken into account as preventive work [3,4].

For patients with inoperable esophageal cancer there are modalities of endoscopic therapeutics to alleviate dysphagia, on which there is the placement of a self-expanding stent as the method of choice. The National Center for Minimum Access Surgery has satisfactory results in the application of therapeutics according to articles published by Ruiz and Ortega [5,6].

Like any procedure, it has its advantages and complications described in the literature [5,7], where those related to the procedure and the tumor are found; the latter being worrying for the team in charge of monitoring the patient, for the responsibility of selecting the palliative method to correct the complication presented, where tumor overgrowth according to reports appears between six and eight months respectively; and its correction is in consideration of the clinical assessment, available resources, safety of the technique and its effectiveness.

The use of argon plasma in patients with tumor overgrowth is cost-effective when compared with other modalities such as the placement of multiple self-expanding prostheses [8]. The National Center for Minimum Access Surgery, in contribution to the rationalization of the country's resources for the benefit of the population, decides to use argon plasma ablation and leave the placement of self-expanding stents as the primary method to alleviate dysphagia.

According to the literature reviewed, there are several studies worldwide related to the usefulness of argon plasma in the gastroenterology department, with experience of more than 20 years according to published reports [9,10], in which the utility of ablative therapy in ectasias

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Figure A: ERBE 200D equipment was used, with flow 1.0, effect 2, 50 watts, 4300 Vp, APC mode, recan-prosthesis program, circumferential and frontal probe interchangeably.

Figure B: Image of fluoroscopy with water-soluble contrast (Composite Meglumine Ditrizoate).

predominates vascular, Barret's esophagus and actinic proctitis. There are worldwide reports on cost and effectiveness studies related to the issue in the United States, Japan and the European Union, with encouraging results [11-13].

In Cuba, for which the authors have been able to systematize, no studies were found on the cost-effectiveness of ablative therapy with argon plasma in esophageal tumor overgrowth with the use of self-expanding stents. Therefore, the authors consider that a case report can be an approach to analyze the effectiveness of argon plasma in the Cuban context and compare it with international results.

Case Presentation

A 59-year-old female patient, a Cuban national, who is received in the classification consultation in February 2019, in the gastroenterology classification consultation of the National Center of Minimum Access Surgery, for presenting dysphagia to solids and liquids, significant weight loss and decay. A physical examination is performed, confirming positive aspects such as pale mucous membranes, no correspondence with weight and height, to the anamnesis, a smoking patient over 40 years old and apparently healthy. Histology corresponding to Squamous Cell Carcinoma is confirmed, according to results from the referring hospital.

Fluoroscopy is indicated with water-soluble contrast (Composite Meglumine Ditrizoate) and full defect images are visualized, with esophageal body stenosis, so continuity of endoscopic studies is indicated for better diagnosis and treatments.

Panendoscopy is performed by checking at 35 cm a horseshoe-shaped lesion that compromises the lumen of the organ. The 80 mm × 26 mm self-expanding prosthesis (BorBare-Type) is partially covered with silicone.

At four months, he attended the follow-up consultation with

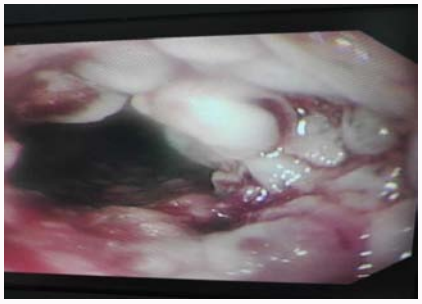

Figure C: Endoscopic image of tumor overgrowth.

Figure D: Endoscopic images one month after the procedure was carried out.

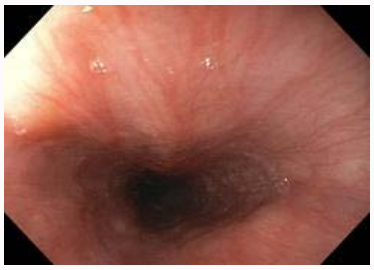

Figure E: Endoscopic images one month after the procedure was carried out.

difficulties to feed, nausea, vomiting and decay, finding dysphagia to solids and liquids, product of tumor overgrowth. The work team decides to dilate the prosthesis with a Polyvinyl Guide and spark plugs from Savary-Gilliard number 9, 10 and 11 respectively. Then ablative therapy with argon plasma was applied, resecting the tumor with a single session within 20 min of proceeding under anesthetic sedation.

The informed consent to participate in the study, consent to apply the ablative method was applied to the patient and the publication of the article was authorized.

ERBE 200D equipment was used, with flow 1.0, effect 2, 50 watts, 4300 Vp, APC mode, recan-prosthesis program, circumferential and frontal probe interchangeably, as shown in Figure A. Below are images related to fluoroscopic and endoscopic results of the tumor (Figure B). Image of fluoroscopy with water-soluble contrast (Composite Meglumine Ditrizoate) (Figure C). Endoscopic image of tumor overgrowth Endoscopic images one month after the procedure was carried out (Figure D and E).

Results and Discussion

Ablative therapy has been used as a palliative method for more

than two decades, in the destruction of tumor overgrowth in patients with use of self-expanding stents; both palliative techniques, for the management of patients with surgically unresectable tumors [14].

Argon Plasma Therapy (APC) 15 consists of a thermoablative, monopolar method of contactless electrocoagulation that allows the application of high frequency electrical energy by delivering ionized argon gas to the tissues, which generates from a surface retraction zone to an area of deep devitalization and consequently destruction of tissue or coagulation hemostasis upon reaching temperatures between 100 and 110º.

The advantages of Ablation with Argon Plasma support the effectiveness of the application taking into account that it allows fast, effective and safe coagulation, even of large areas, limited penetration depth (0.5 mm to 3 mm), better healing of lesions, due to the minimum carbonization, better visibility by reducing smoke production markedly, there is no vaporization, minimum risk of perforation, non-contact procedure, minimum risk of damage to metal prostheses, axial, radial or lateral application, effective and safe procedure, equipment Cost-efficient, cheaper than laser fifteen.

There are studies that show evidence of application in Gastroenterology, especially in vascular ectasias, Barret's esophagus, actinic proctitis and tumor overgrowth [9-11,15-17]. The results are usually based on the applicability in terms of number of sessions, duration, appearance of complications related to the procedure.

Studies of the European Union 13 evaluate the cost-effectiveness of the ablative method, serving as a reference for consideration in the Cuban context, the achievement is in cleaning and sterilization (frontal, lateral and circumferential ablation probes) and in care during use; which allows the reuse of instruments. Other important aspects are related to the disposition of the health team when proceeding, time of realization, results obtained with the ablative method in the devitalization of growing tissue.

Other authors such as Alison et al. [18] focused their study on the degree of dysphagia, combination of palliative therapies and work of the multidisciplinary team during the procedure. The case report presented also took these standards into account and a resolution of dysphagia was achieved when compared to grade four in which the patient was in the initial stage.

The patient presented a minimum of complications, pain, during the first 12 h of performing the procedure which decreased with oral painkillers (dipyrone 300 mg) two tablets every six hours. Similar results were obtained by Ruiz et al. [5].

Regarding the diet, during the first 12 h, the patient remained on a liquid diet and subsequently increased the soft diet rich in protein and vegetables. The satisfactory evolution of the patient was verified in the corresponding consultation four months after the ablative therapy was performed.

At the beginning of food intake, the patient decreased decay, vomiting and nausea were eliminated, thus improving her general condition, achievements that were verified through the follow-up consultation and after the application of health-related quality of life instruments [19], specific for patients with esophageal cancer.

Argon plasma therapy is safe, given the effectiveness of the therapeutic modality to resect tumor overgrowth in patients with self-expanding stents, with a minimum of complications. It is recommended to conduct case series studies in patients with tumor overgrowth treated with (APC) and population studies of cost and effectiveness of APC in cancer patients with use of self-expanding esophageal stents in Cuba.

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