

ORIGINAL ARTICLE

Inguinal Sentinel Node Biopsy in Epidermoid Carcinoma of the Anal Canal: a Pilot Study

Leonaldson Santos Castro, MSc, PhD, TCBC, FACS; Jorge Mali Júnior, MD; José Francisco Rezende Neto, MD; Dauro de Sá Villela Pedras, MD; Gustavo Stoduto, MD; Jairo Sousa Pacheco, MD; Marcus Valadão, MD; José Humberto Simões Corrêa, MSc, TCBC; Jurandir de Almeida Dias, MD
Abdominal-Pelvic Surgery and Nuclear Medicine Services - Brazilian National Cancer Institute - Rio de Janeiro, Brazil

ABSTRACT

It has been well established that the primary therapeutic approach to anal squamous-cell carcinoma is chemoradiotherapy. Inguinal lymph node (LN) status is an important prognosis indicator and the presence of metastases in the inguinal LN is an independent marker of the local failure and overall survival. The appropriate management of patients with primary anal cancer and clinically uninvolved groins remains controversial. Nowadays there is no reliable diagnostic method to accurately determine nodal status of the inguinal region. This study was conducted to evaluate the feasibility of a novel assessment method of the nodal status of the inguinal region in patients with epidermoid carcinoma of the anus and anal margin. We advocate that sentinel lymph node biopsy is a safe and feasible technique to detect metastases in inguinal nodes.

Key words: Sentinel lymph node biopsy. Anus. Carcinoma. Squamous Cell.

INTRODUCTION

The anal squamous-cell carcinoma is a rare cancer, comprising 1-2% of all gastrointestinal tumors and 5% of anorectal malignancies.¹ Until the 1970s, the abdominoperineal resection had been the standard treatment. Since 1974 multimodality treatment combining radiation and chemotherapy has become the primary therapy for anal carcinoma.² This approach has the advantage of sphincter preservation and a substantial survival benefit when compared to surgery alone.

Inguinal lymph node (LN) status is an important prognosis indicator and the presence of metastases in the inguinal LN is an

independent marker of the local failure and overall survival.^{3,4} Clinically apparent synchronous metastases to the superficial inguinal LN occur only in 10%-25% of the patients.^{5,6} Systematic inguinal LN dissection was abandoned due to the absence of a significant survival benefit and the substantial morbidity associated with this procedure. Nowadays, irradiation of the inguinal areas is the standard therapy for metastatic disease in the inguinal region. However, the appropriate treatment for patients with primary anal cancer and clinically uninvolved groins remains controversial. At present, no reliable diagnostic method for accurately determining the nodal status of the inguinal region is available.⁷

Since Gould et al.⁸ in 1960 first described the sentinel lymph node technique in parotid cancer, sentinel lymph node biopsy (SLNB) has become a valuable tool for solid tumor treatment. The SLNB has become widely accepted in routine treatment for melanoma and breast cancers. Its role in gastrointestinal tumors is currently under intensive clinical research.

The goals of the SLNB included: accurate assessment of the inguinal nodal status using a minimally invasive procedure with low morbidity, sparing selected patients to be submitted to inguinal irradiation, therefore decreasing treatment side effects.

Correspondence

Leonaldson dos Santos Castro
Chefia do Abdome - INCA - HCI
Praça da Cruz Vermelha, 23 5º andar
20230-0130 Rio de Janeiro, Brazil
E-mail: leonaldson@uol.com.br

This study was conducted to analyze the feasibility of novel assessment method of the nodal status of the inguinal region in patients with anal and anal margin epidermoid carcinoma.

METHODS

The procedure was performed in combination with the Nuclear Medicine Service of the Brazilian National Cancer Institute (INCA).

The sentinel lymph node procedure consisted of a combination of preoperative lymphoscintigraphy and intraoperative detection of the sentinel node with a gamma probe.

From 6 to 12 hours before the procedure, 0.8ml of Technetium 99m was injected in the four quadrants around the tumor and serial scintigraphic exams were performed until a high-intensity signal in the inguinal region was found. The skin localized over inguinal region was marked by a nuclear physician (DSVP) with an indelible ink pen. In the operating room, under general anesthetic, patent blue dye was also injected nearby the tumor to facilitate direct identification of the blue retained in the lymph node. An inguinotomy was performed over the marked skin and with the help of a gamma probe and blue-dye lymphatic mapping and spotting of the patent blue dye, the lymph node was isolated. After removal, the sentinel LN was analyzed by hematoxylin/eosin staining and immunohistochemistry.

RESULTS

CASE 1

Sixty-three year-old patient, white, female with history of pain and occasional anal bleeding presenting a tumoration in the anal canal (Figure 1). On clinical examination, there was no evidence of palpable inguinal lymph nodes. The patient have undergone a biopsy of the lesion under local anesthesia. The histological diagnosis confirmed a moderate differentiated epidermoid carcinoma. The clinical stage was based on AJCC/UICC: T2N0M0. Pathological antecedents: three years ago endometrium tumor treated with pelvic radiotherapy associated with brachitherapy. Planning therapy: an

abdominoperineal resection and sentinel node biopsy. On lymphoscintigraphy, there was evidence of focal accumulation of radioactivity in two lymph nodes in the right inguinal region which were marked on the patient's skin (Figures 2 and 3). This was followed by SLNB with a combination of probe-guided surgery and blue-dye lymphatic mapping (Figure 4). There was no evidence of metastatic deposit in two lymph nodes (Figures 5 and 6) isolated neither using hematoxylin/eosin nor immunohistochemistry. The patient was submitted to surgery without inguinal lymph node dissection.

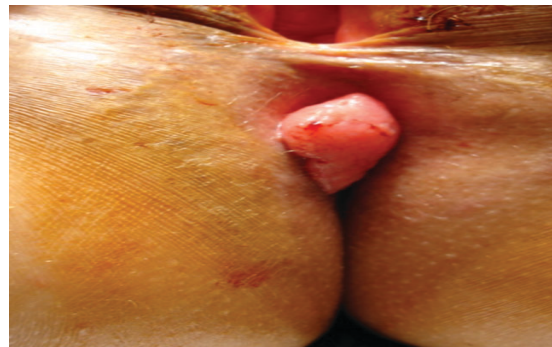


Figure 1 – Anal canal tumor

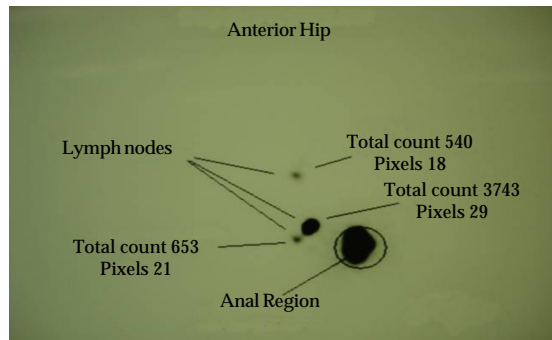


Figure 2 – Focal radioactivity accumulation in three lymph nodes



Figure 3 – Two lymph nodes marked on the patient's skin



Figure 4 - Blue-dye injected around the tumor

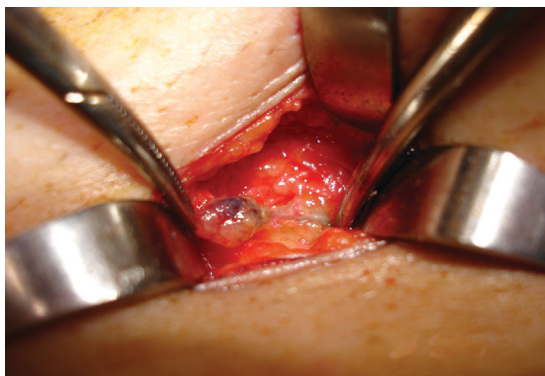


Figure 5 - Isolated first sentinel lymph node



Figure 6 - Isolated second sentinel lymph node

CASE 2

Forty-six-year old patient, white, female was submitted, in another healthcare unit, to resection of the anal verge tumor with histopathological diagnosis of well differentiated epidermoid carcinoma, focally involved limits. Pathological antecedents: kidney transplant 10 years ago. On lymphoscintigraphy, evidence of focal radioactivity accumulation was observed in one point in the right inguinal region marked on

patient's skin (Figure 7). This was followed by SLNB with a combination of probe-guided surgery and blue-dye lymphatic mapping. No evidence of metastatic deposit in lymph node revealed by hematoxylin/eosin staining was seen. Immunohistochemical study was negative for pancytokeratin. The patient was submitted to re-resection of the anal verge tumor without inguinal lymph node dissection.

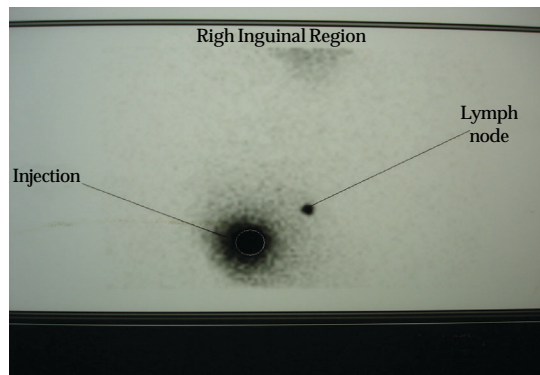


Figure 7 - Focal accumulation of radioactivity in a lymph node in the right inguinal region

DISCUSSION

It has been well established that the primary therapeutic approach to anal squamous-cell carcinoma is chemoradiotherapy. The overall survival rate in patients without lymph nodes metastases is 70%.⁹

The irradiation of inguinal regions clinically negative has not yet been clearly defined. Currently no accurate technique for determining inguinal lymph node metastases has been developed. We believe that the SLNB in anal carcinoma may be helpful in accurately determining inguinal node status, thus selecting a more appropriate radiotherapeutic regimen to be used, sparing patients with no inguinal metastases from the risk of irradiation, including necrosis of the femoral head, venous thrombosis, lymphedema and lymphangiosarcomas.

These cases demonstrate the feasibility of the sentinel lymph node procedure for anal cancer, however this technique needs to be tested in additional studies in larger population to determine its actual benefits.

REFERENCES

1. Klas JV, Rothenberger DA, Wong WD, Matoff RD. Malignant tumors of the anal canal. *Cancer* 1999;85:1686-93.
2. Nigro ND. An evaluation of combined therapy for squamous- cell carcinoma of the anal canal. *Dis Colon Rectum* 1974;17:354-6.
3. Deans GT, McAleer JJ, Spence RA. Malignant anal tumors. *Br J Surg* 1994;81:500-8.
4. Oliver GC, Labow SB. Neoplasms of the anus. *Surg Clin North Am* 1994;74:1475-90.
5. Fuchshuber PR, Rodriguez-Bigas M, Webert Petrelli WJ. Anal canal and perianal epidermoid cancer. *J Am Coll Surg* 1997;85:494-505.
6. Papillon J, Montbarbon JF. Epidermoid carcinoma of the anal canal: a series of 276 cases. *Dis Colon Rectum* 1987;30:324-33.
7. Perera D, Pathma-Nathan N, Rabbitt P, Hewett P, Rieger N. Sentinel Node Biopsy for squamous-cell carcinoma of the anus and anal margin. *Dis Colon Rectum* 2003;46:1027-31.
8. Gould E, Winship T, Philbin P, Kerr HH. Observations on a sentinel in cancer of the parotid. *Cancer* 1960;13:77-8.
9. Gerard JP, Chapet O, Samiei F, Morignat E, Isaac S, Paulin C, et al. Management of inguinal lymph nodes metastases in patients with carcinoma of the anal canal. *Cancer* 2001;92:77-84.