

Case report

Anal ultrasound in the diagnosis of anal carcinoma

Iwona Sudół-Szopińska¹, Marek Szczepkowski², Wiesław Jakubowski¹

¹Department of Diagnostic Imaging, Second Faculty of Medicine,

²Second Surgical Department, Bielany Hospital, Warsaw, Poland

Background. We present a case of adenocarcinoma of the anal canal to demonstrate the usefulness of the anal ultrasound (AUS) in the diagnostics.

Case report. AUS was performed with the use of Bruel&Kjaer scanner type 3535 with an axial 7.0 MHz endoprobe. Examination was performed in left lateral position.

AUS allowed for exact assessment of the depth of infiltration of the anal wall by the tumor, and precisely visualized its location and echotexture. Assessment of the perianal lymph nodes and tumor spread into adjacent tissues was also possible.

Conclusions. AUS is a valuable imaging method in assessing the depth of invasion of anal carcinoma and gives valuable information before deciding on the choice of treatment.

Key words: anus neoplasms – ultrasonography

Introduction

Anal tumors account for about 2.5-5% of all malignant tumors of the colon. Their precise staging is important with regard to different methods of treatment. The depth of penetration within the wall of the anal canal is poorly recognized by digital examination. We present the ultrasound images and usefulness of anal ultrasound (AUS) in staging of anal canal carcinoma.

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Correspondence to: Iwona Sudół-Szopińska, MD, PhD, Zakład Diagnostyki Ultrasonograficznej, Wojewódzki Szpital Bródnowski, 03-285 Warszawa, ul. Kondratowicza 8; Phone/Fax +48 22 811 95 91; mobile 0 501 716 407; e-mail: mdyvonne@poczta.wp.pl

Case report

An 83 year-old man complaining of anal bleeding and constipation observed for one year was admitted to proctologic outpatient clinic. Per rectum examination revealed an abnormal, mobile mass on the anterior wall of the anal canal, with the diameters of 2.5×2 cm.

During anoscopy, a specimen was taken and the histopathologic diagnosis revealed adenocarcinoma. Prior to AUS, an enema was done. AUS was performed to assess the stage of the tumor that was essential to choose a treatment method.

For anal ultrasonography, Bruel&Kjaer scanner, type 3535 with axial endoprobe of a frequency of 7.0 MHz and covered by a plastic cone with the external diameter of 17 mm

was used. The cone was filled with a few milliliters of degassed water, covered with a condom, and then introduced into the anal canal up to the depth of 5 cm. At the mid anal level, at a depth of 2 cm, a tumor was visualized originating from the mucous of the anterior and right wall, infiltrating a distal end of the internal anal sphincter (Figure 1). The tumor mass was getting larger towards the anal orifice and was infiltrating the subcutaneous part of the external anal sphincter at its anterior wall. At the low anal level, its diameter on axial image reached 15×13mm (Figure 2). The tumour's echotexture was not homogenous with anechoic areas representing most likely degeneration. No enlarged lymph nodes were visualized in the perianal tissues and the surrounding structures were not invaded.

According to the sonographic classification (uTN), the stage of the disease was defined as uT2N0. The tumor's size less than 2.5 cm, its mobility on rectal examination and lack of enlarged lymph nodes in perianal tissues were all the signs that spoke in favor of the local excision of the tumor. A polypoid lesion on the anterior wall at the low anal level,

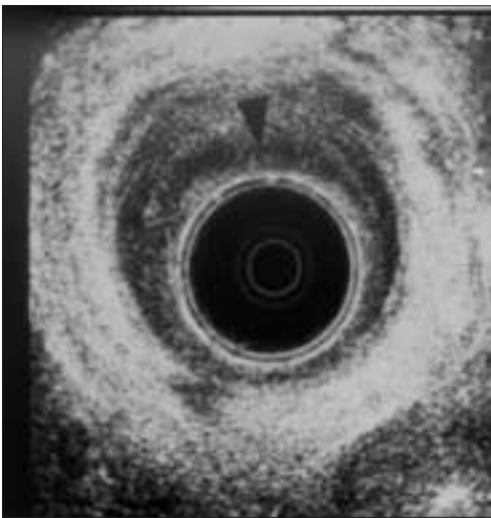


Figure 1. Adenocarcinoma of the anal canal. In the anterior (between 11 and 3 o'clock), a tumor invaded distal end of the internal anal sphincter (see the arrow).

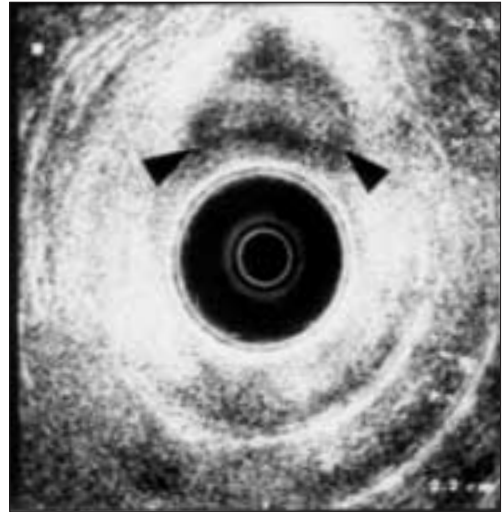


Figure 2. Adenocarcinoma of the anal canal. At low anal level, the tumor has the diameters of 15×13mm (arrows) and invades subcutaneous part of the external anal sphincter.

1-2 cm from the anal orifice, of the size of 2.5×1cm and degenerating in the center was visible during operation. The result of the histopathologic examination of the interoperative specimen was adenocarcinoma mucinosum partim gelatinosum in adenoma villotubulare ani. A malignant infiltration was found in the superficial muscular layer within a transition zone of the anal canal.

Discussion

The presented case of adenocarcinoma of the anal canal is rare, not only because of its prevalence but also its histologic type. Among the most frequent epithelial neoplasms, such as carcinoma planoepitheliale, basocellulare and mucoepidermale, adenocarcinoma is the most rarely diagnosed.¹ Additionally, anal canal carcinomas most frequently occur in patients between 55-60 years of age, and mostly affect women (ratio 2:3).

The staging of the anal canal cancers is important in planning treatment strategies

(which include local excision, abdomino-perineal resection of the rectum, radiotherapy, chemotherapy).¹⁻³ The TNM classification system currently used is based on the result of rectal examination, where only the margins of the tumor around the anal circumference and its proximal and distal ends, are assessed without assessing its mobility and evaluating the depth of penetration of the tumor into the canal wall. There is a small number of reports presenting the results of imaging methods for anal tumors and they are mostly addressed to low rectal cancers invading the anal canal. AUS in anal tumors diagnostics enables to define precisely the location of the tumor and its relation to the anal levels and walls. It is possible to assess local advancement with AUS because the layered structure of the anal canal is visible on AUS image.⁴⁻⁸ Similarly as rectal tumors, anal carcinomas are also staged according to uTN classification, where Au^u means that ultrasonography was used to determine the staging. In:

- 1) uT1 tumor is limited to submucosa and mucosa
- 2) uT2 is limited to sphincters
- 3) u T3 infiltrates perirectal tissues,
- 4) u T4 invades surrounding structures.

N0 and N1 mean lack or metastatic regional lymph nodes, respectively.

An anal carcinoma in AUS image appears as hypoechoic mass, most commonly not homogenous with areas of degeneration and with irregular outlines. Biopsy is necessary to confirm final diagnosis. In literature, single publications can be found on the accuracy of AUS in anal tumors staging, which is said to be almost 86%.^{2,3,9} In a study by Novell F. et al.³ accuracy of AUS in local staging of anal canal cancers was 85.7%: in a group of seven patients with anal carcinomas, sonographical assessment caused downstaging in only one case. In another study⁹, AUS was performed on a group of 30 patients with anal cancers. AUS accurately assessed the depth of inva-

sion by tumors and their relation to the surrounding structures.

The sonographic diagnosis influenced the choice of treatment methods. In the presented case, the staging of the anal cancer and its relation to the anal sphincters was not problematic at all. Lymphadenopathy is found in 25% of cases with anal tumors. It is said that sensitivity of endosonography in visualizing enlarged lymph nodes is 83%. Lymph nodes larger than 3 mm are already visible on AUS.^{5,8} The accuracy of endosonography and endoluminal magnetic resonance imaging (MRI) for lymph node staging is 62-83% and 39-95%, respectively.¹⁰ The accuracy of computed tomography (CT) is between 22-73%.¹⁰ The studies comparing AUS and MRI show that MRI is inferior to AUS in N staging, although the specificity of both is low.¹⁰⁻¹² The size appeared to be unreliable criterion^{10,12} whereas their echogenicity appeared to be more reliable. Hypoechoic lymph nodes representing metastases were predicted with a sensitivity of 72%.⁶

When the diagnostics of malignant diseases is concerned, AUS is currently used before surgery of rectal tumors. Its ability to assess the contraction activity of striated muscle in the so-called "dynamic examination" is important.¹³ For the anal canal tumors diagnostics, it is of a great value and, comparing to the endosonographic diagnostics of rectal tumors, AUS will probably have greater value due to less problematic and more equivocal criteria of diagnosis for each stage of the anal carcinomas. In postoperative follow-up, AUS may allow an early diagnosis of local recurrence in perianal tissues before they are evident on clinical examination.¹⁴ In case of primary radiation or chemotherapy, AUS may be used to assess the tumor response to treatment from the changes of its size and echotexture.^{2,3} A fine needle aspiration biopsy under sonographic control of an abnormal lesion is also possible to perform.³ Simplicity, availability, non-invasiveness of

AUS together with excellent images of anal cancers and a precise assessment of their invasiveness are the advantages of this method, which should be carried out in addition to digital and anoscopy examinations and should have its place in the diagnostic algorithms of the malignant diseases of the anal canal, as it already has for rectal cancers.

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