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Case Report

Anal gland adenocarcinoma: a rare case report

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ABSTRACT

Anal gland adenocarcinoma is an extremely rare malignancy, with squamous cell carcinoma being the most common type of anal canal cancer. Due to its rarity, there are no well-defined diagnostic criteria or standardized treatment protocols for this condition. This study describes a rare instance of adenocarcinoma in the anal canal, which initially manifested as an anal fistula. The patient received a multifaceted treatment plan encompassing surgical intervention, chemotherapy, and radiotherapy. The study investigates the methods of diagnosis, characteristics of tumours, and the selected treatment approach. This case highlights the challenges in diagnosing and managing anal canal adenocarcinoma. Given its rarity, further studies are needed to establish standardized diagnostic and treatment guidelines.

Keywords: Adenocarcinoma, Squamous cell carcinoma, Anal canal cancer, Fistula, Malignancy

INTRODUCTION

Anal canal cancer is an extremely unusual form of intestinal neoplasm. Anal canal cancers are predominantly squamous cell carcinomas (75–80%) or adenocarcinomas (20– 25%) [1]. Certain types of anal adenocarcinomas (AAC), referred to as the colonic type, are believed to develop from the glandular cells found in the transitional zone mucosa. In contrast, other forms of AAC are hypothesized to originate from the glands that line the anal canal itself, which are considered extra mucosal. The latter is often linked to uncontrolled chronic anal fistulas, which can lead to adenocarcinoma of the anal glands.[2,3] Uncommon extra mucosal AAC primarily originates in the mucous membranes or the intramural region lacking mucosa.

This tumor exhibits extensive invasion beneath the mucosa and resembles metastatic gastrointestinal cancer due to the uninvolved overlying mucosal layer.[4] Anal mucosal neoplasms can develop from anal glands, which are complex tubular structures with ducts that open at the dentate line, or they may be linked to a pre-existing anal fistula. AAC is an exceptionally rare condition that can be difficult to differentiate from other forms of rectal adenocarcinomas that have locally metastasized.

Factors that contribute to the probability or chance of developing AAC include tobacco use, same-sex orientation, HIV infection, inflammatory bowel disease (specifically Crohn's), and long-term fistula presence.[5-7] Compared to the more common squamous cell carcinomas (SCC) of the anal canal, adenocarcinomas (AC) in this region have a less favorable prognosis.[8] While promising therapeutic approaches have been developed, a comprehensive and effective treatment strategy remains elusive. The scarcity and apparent diversity of this tumor have hindered the execution of comparative or analytical epidemiological studies that could potentially resolve the inconsistencies in treatment options. In this paper, we present an uncommon instance of adenocarcinoma in the anal canal.

CASE REPORT

Medical history and investigations

A 74-year-old hypertensive male presented with a six-month history of pain and swelling in the left perianal region, along with a 15-day history of straining during urination. On digital rectal examination, the rectal mucosa was free, but a palpable mass was noted on the anterior wall. There were no signs of active discharge or lymphadenopathy.

An MRI fistulogram was performed due to suspected fistula-in-ano, revealing a heterogeneously enhancing, multilobulated, and septated mass with areas of necrosis in the perineum, involving the left ischiorectal fossa. The lesion measured 4.3×3.6×3.3 cm and extended to the penile bulb and adjacent bulbus spongiosum, displacing the perineal body to the right.

A Trucut biopsy confirmed moderately differentiated mucinous adenocarcinoma infiltrating fibro-fatty tissue. Immunohistochemistry showed strong and diffuse positivity for cytokeratin 7 (CK7) and negativity for CK20, CDX2, AMACR, and GATA-3, with a Ki-67 index of 25%. The CK7 positivity suggested a possible origin from a perianal gland.

FDG-PET findings were consistent with MRI results and showed no evidence of metastasis.

Management

Surgical intervention involved a wide local excision of the left perianal gland, pedicled gracilis flap interposition, laparoscopic loop ileostomy, and end-to-end urethroplasty (Figure 1). Due to the rarity of the disease and the absence of standard treatment guidelines, neoadjuvant radiation and chemotherapy were planned postoperatively. The patient underwent short-course radiotherapy following the Quantec trial protocol, receiving five cycles of 25 Gy.

Adjuvant chemotherapy was administered following PET findings, which demonstrated circumferential asymmetrical thickening of the anal canal, mid, and lower rectum. The lesion was associated with loss of fat planes adjacent to the right posterolateral prostate, adherence to the right levator ani, and extension to the right crus of the penis. A mild decrease in the extent and metabolic activity of these findings was observed in comparison to the previous scan.

The previously detected enhancing left mesorectal lymph node had decreased in size and metabolic activity, while most right inguinal and external iliac nodes remained stable in size with reduced metabolic activity. Persistent thrombosis in the left femoral vein was noted, with new thrombosis observed in the right femoral vein. Hypo-enhancing areas in the upper poles of both kidneys had diminished in extent (Figure 2), though a residual hypo-enhancing area with moderately increased metabolic activity was detected in the right kidney, possibly indicating residual infection. Additionally, diffuse thickening of the urinary bladder walls with surrounding fat stranding suggested cystitis. No evidence of metabolically active disease was detected elsewhere in the body.

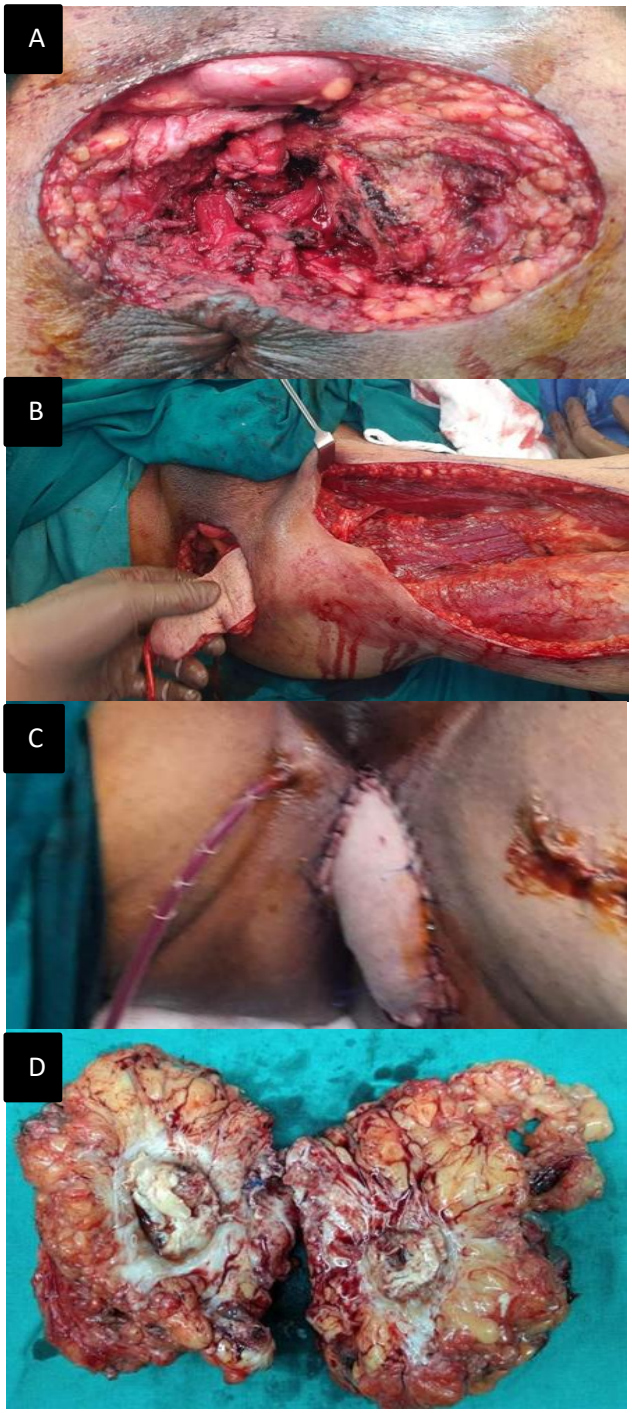

Figure 1: (A) wide local excision of left perianal gland, (B) pedicled gracilis flap interposition with lap loop ileostomy, (C) urethroplasty performed with a flap in position, (d) excised tumor specimen.

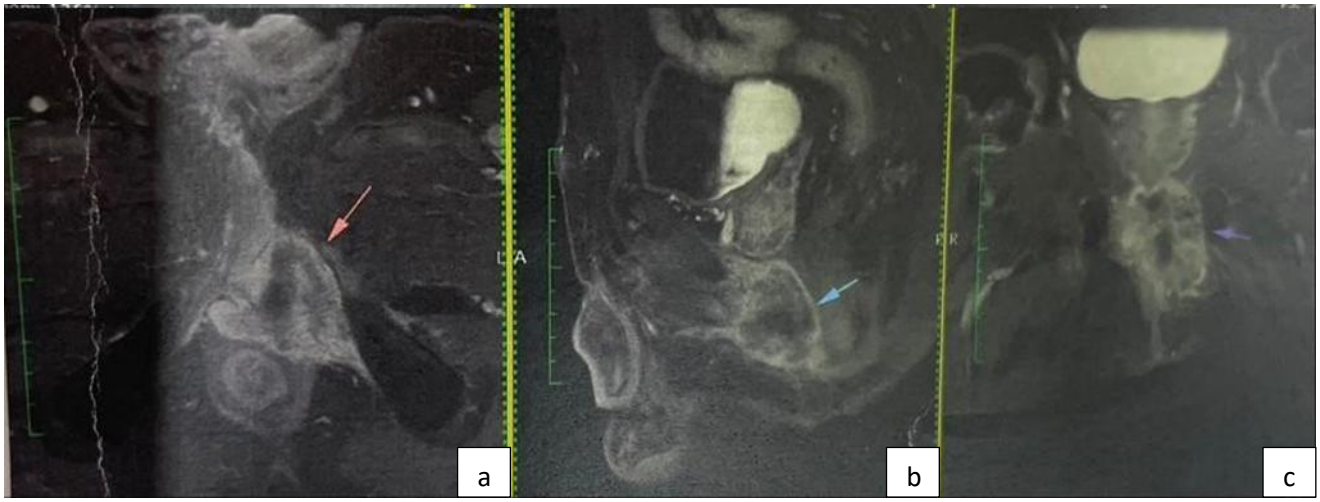

Figure 2 (a-c): MRI of Pelvis and Perineum showing no residual or recurrent tumour

DISCUSSION

AAC is an infrequent form of malignant tumor.[9] Roughly one-third of these tumors are found outside the anal canal or in the sciatic rectum fossa. About half of the cases involve anal fistulas. The development of neoplastic lesions in anal glands is primarily driven by ongoing mucosal regeneration due to chronic inflammation.[10] The occurrence of anal adenocarcinoma in patients with long-standing local inflammatory conditions, such as anal fistulas and inflammatory bowel disease, suggests a potential connection. An alternative theory proposes that anal adenocarcinoma may result from the implantation of cancer cells from a more proximal colonic site or from prolonged immunosuppression in inflammatory bowel disease patients.[11] Consequently, it is essential to perform a comprehensive examination of the digestive tract during colonoscopy, with histological analysis of all polyp biopsies. As with all cancers, early diagnosis and treatment of anal adenocarcinoma require a high level of suspicion. A long-standing anal fistula without prior gastrointestinal cancers is highly indicative of a de novo malignancy.[12]

While AAC shares histological and immunophenotypical characteristics with common colorectal adenocarcinoma, it is situated lower and has a worse prognosis compared to SCC.[13,14]

To determine the tumor's origin and differentiate between anal adenocarcinoma subtypes, immunohistochemistry is employed. The expression patterns of cytokeratins 7 and 20 (CK7, CK20) are particularly valuable for this purpose. Studies have shown that anal SCC typically stain CK7/CK20, colorectal subtype AAC stain CK7/CK20+, and extramucosal adenocarcinomas express CK7+ and CK20+/.[15,16] In the present case, a trucut biopsy revealed infiltrating mucinous adenocarcinoma in the fibro-fatty tissue. The Ki 67 index was 25%, with strong and widespread positivity for CK7, but no staining for cytokeratin 20 (CK20), CDX2, AMACR, or GATA-3. The positive CK7 result in the mucinous adenocarcinoma suggested a potential perianal gland origin. FDG PET detected no metastasis, confirming the MRI findings.

Radical resection is the preferred treatment for ACC, although patients diagnosed in the early stages of cancer progression may benefit from local resection, a less invasive and risky surgical procedure. Research has shown that local resection can be effective for small, well-differentiated anal canal tumors below the dentate line.[17-19] However, if post-operative pathology reveals positive margins, additional radiotherapy or chemotherapy is recommended. When the sphincter is extensively invaded or the patient is unsuitable for local resection, abdominal perineal resection is advised. In our case, the surgical approach included wide local excision of the left perianal gland, pedicled gracilis flap interposition, lap loop ileostomy, and end-to-end urethroplasty.

Due to the rarity of the disease, neoadjuvant radiation and chemotherapy were scheduled post-surgery. Following therapy, the left mesorectal lymph node showed decreased size and metabolic activity. Most right inguinal and external iliac nodes maintained their size but exhibited reduced metabolic activity. Left femoral vein thrombosis persisted, while right femoral vein thrombosis was newly observed. The hypoenhancing patches in both kidney upper poles decreased in extent, with a remnant area in the right kidney showing significantly elevated metabolic activity. In this instance, resection followed by adjuvant radio-chemotherapy proved to be an effective treatment strategy, though close monitoring for recurrence is necessary. Previous studies also support the use of preoperative or postoperative chemoradiotherapy as a combined modality treatment.[20]

CONCLUSION

Preoperative diagnosis of AAC presents significant challenges. Nevertheless, a thorough patient history,

appropriate diagnostic tests, and careful examination of pathological findings may suggest the presence of an anal glandular adenocarcinoma. In the case we encountered, immunohistochemical analysis proved to be an effective method for confirming the diagnosis. For potentially curable cases, we suggest pursuing surgical intervention followed by either a combination of chemotherapy and radiation or radiotherapy alone to optimize overall survival rates.

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