

## CASE REPORT

# Diffuse type gastric adenocarcinoma with atypical presentation: A case report

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## Key Clinical Message

Gastric adenocarcinoma can present uncommonly. This emphasizes the need for intensified vigilance in the absence of typical gastrointestinal symptoms, particularly in areas where infectious diseases are common.

## Abstract

Gastric adenocarcinoma, a common advanced-age global malignancy is typically associated with abdominal symptoms. However, atypical presentations such as back pain and respiratory distress particularly in younger patients represent diagnostic challenges. We present a case of a late-30s male who presented initially with back pain, shortness of breath, and constitutional symptoms. A diagnosis of tuberculosis was established presumptively with immediate initiation of treatment. Later on, he presented with abdominal pain and intractable vomiting. Oesophagoduodenoscopy (OGD), tissue histology, and immunohistochemistry confirmed a diffuse type gastric adenocarcinoma. He died as a result of complications from an advanced disease. This particular instance emphasizes the importance of maintaining a high index of skepticism even in atypical presentations, as well as the significance of prompt OGD alongside potential genetic testing if any. Gastric adenocarcinoma should be contemplated by clinicians in a variety of clinical scenarios, especially when handling younger patients from settings with limited resources to facilitate timely diagnosis and effective treatment.

## KEYWORDS

back pain, diffuse gastric adenocarcinoma, respiratory symptoms, younger male

## 1 | INTRODUCTION

Gastric adenocarcinoma is either an intestinal type or a diffuse type.<sup>1</sup> Diffuse type gastric adenocarcinoma is an aggressive malignancy of younger age with poor clinical outcomes.<sup>2–4</sup> In Tanzania, the prevalence of gastric

malignancy is 4.5%, the median age of presentation is 52 years, and gastric adenocarcinoma is the most common histological type.<sup>5</sup> The most common presenting symptoms and signs of gastric adenocarcinoma include abdominal pain, nausea and vomiting, indigestion, unintentional weight loss, anemia, and palpable gastric

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lump.<sup>3,4,6,7</sup> Occasionally, there are atypical presentations including low back pain and respiratory symptoms indicating an advanced stage of adenocarcinoma especially in the younger demographic without obvious gastrointestinal signs and symptoms.<sup>8</sup> This highlights a need for clinicians to have heightened suspicion of gastric adenocarcinoma in younger patients from regions with prevalent infectious diseases and broadening differentials. Incorporation of advanced imaging techniques such as Magnetic Resonance Imaging (MRI) spine and chest computed tomography (CT) scan during diagnostic workup is clinically significant.<sup>6,9,10</sup> We present a case of a male patient in his late 30s, who was diagnosed with diffuse type gastric adenocarcinoma manifesting atypically.

## 2 | CASE HISTORY/EXAMINATION

We present a male patient in his late 30s, who was referred from upcountry with a diagnosis of spondylopathy for orthopedic consultation and an MRI spine. At the referring health facility, He presented with a non-traumatic insidious onset of low back pain in the past 4 months. He rated his pain as 7 on a scale of 0–10. His pain was getting worse in the sitting position and while walking. Conversely, he felt relieved to lying flat. He also reported numbness in both lower limbs, however, there was neither lower limb weakness nor urine or fecal incontinence. Besides, there was no history of abdominal pain, coffee ground emesis, or black tarry stool.

Shortly after arrival at our health facility, he attended orthopedic clinic where an MRI spine was done and the conclusion was keeping with tuberculous spondylitis. Therefore, the diagnosis was made presumptively based on clinical-radiological findings and antituberculosis was initiated. After 2 months on treatment, he developed shortness of breath, low-grade fever, drenching night sweats, and unintentional weight loss. A chest radiograph was requested and revealed a unilateral left sided pleural effusion. Following analysis, the pleural fluid was exudative; (light's criteria: pleural total protein/serum protein=0.8), pleural fluid Adenosine Deaminase (ADA) was 47 IU/L, and there were no malignant cells seen. The index of suspicion was high for pleural tuberculosis.

Two weeks following a diagnosis of pleural tuberculosis, he developed intractable vomiting, abdominal pain, and anorexia. However, there was no history suggestive of gastrointestinal bleeding.

Physical examination was notable for conjunctival palmar paleness and cachexia. His vital signs were within the

normal limits except for tachypnea and low oxygen saturation (90%) on room air. Respiratory examination was significant for reduced left-sided chest expansion, reduced breath sounds, and stony dullness keeping with pleural effusion. Neurologically, there was loss of anterolateral sensory modalities on lower limbs with sensory level (Thoracic vertebral number 6), deep tendon reflexes were brisk and plantar reflexes were upgoing. The rest of examination was normal.

## 3 | DIFFERENTIAL DIAGNOSES, INVESTIGATIONS, AND TREATMENT

Disseminated tuberculosis (pleurisy and spine), brucellosis (pulmonary and spine), and metastatic tumor to the lungs and spine were among the differential diagnoses. Given that tuberculosis was not bacteriologically confirmed and that the patient's symptoms worsened during a more than two-month treatment trial with tuberculous chemotherapy, the odds of tuberculosis fell.<sup>11</sup> Yet brucellosis was less likely because the MRI spine showed no signs of spondylodiscitis or anterosuperior destruction of the vertebral body (Pedro-Pons' Sign), which are radiological features associated with brucellosis,<sup>12</sup> and since the serology (IgM and IgG) was both negative. Further investigations were performed to rule out the possibility of a metastatic tumor from the breast, gastrointestinal tract, or prostate to the lung and spine.

Laboratory investigations identified normocytic normochromic anemia with hemoglobin 9.4 g/dL, serum lactate dehydrogenase was elevated (1182 units per millimeters) and acute phase reactants were significantly elevated (C-reactive protein of 11.9 mg per deciliter and erythrocyte sedimentation rate of 75 mm per hour). Liver chemistries were normal except for Aspartate transaminase which was elevated five times the upper limit of normal. The tumor makers including alpha-fetoprotein (3.6 IU/mL), and Carbohydrate antigen—125 (22 IU/mL) were within the normal limits except for carcinoembryonic antigen (2.7 ng/mL) which was slightly elevated. The serology test was negative for Human Immunodeficiency Virus as well as *Helicobacter pylori*. MRI spine revealed wedge collapse and burst fracture of T6 and T10 vertebral bodies respectively (Figure 1). CT scan of the chest and abdomen was notable for fluid and air collection in left pleural cavity, multiple lung parenchymal nodules and multiple hypodense enhancing hepatic lesions (Figure 2).

OGD revealed a gastric mass at cardia of about 4.8 × 5.9 cm. Tissue biopsy of gastric mass identified diffuse gastric adenocarcinoma (Figures 3,4,5).

Immunohistochemistry of the gastric mass was done and the human epidermal growth factor receptor (HER2/neu). Due to its unavailability, genetic testing was not done.

### 3.1 | Outcomes and follow-up

Since the disease was in an advanced stage, supportive therapy was the only option and the following were done: insertion of a gastrostomy tube for feeding and underwater seal drainage to drain pleural fluid. Additionally, other supportive therapies including pain

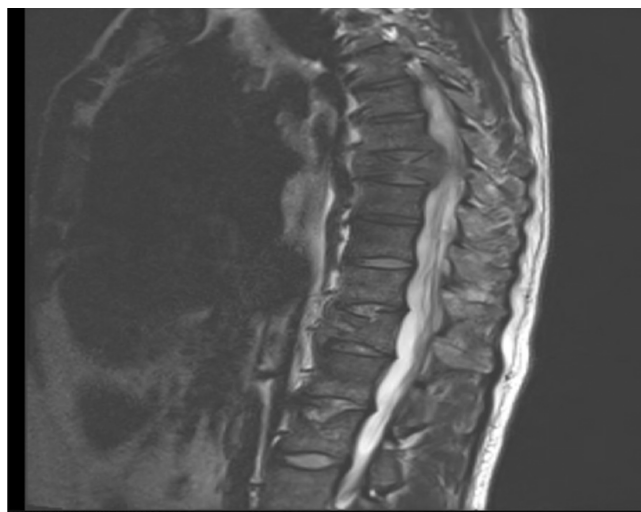
management and intravenous fluids therapy were also provided. Shortly after, he died due to multisystemic complications.

## 4 | DISCUSSION

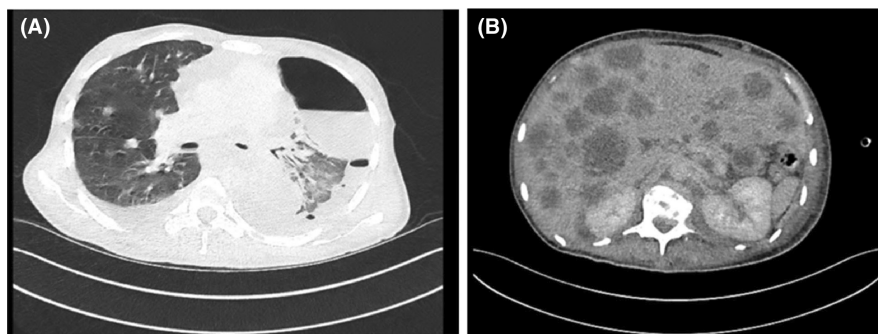
Diffuse gastric adenocarcinoma in younger age is due to the interplay between genetics and environments and portends poor clinical outcomes with a high mortality rate occurring in less than 12 months.<sup>7,13–16</sup> The clinical symptoms of gastric cancer in symptomatic patients may include vomiting, dyspepsia, dysphagia, early satiety, weight loss, and/or iron deficiency anemia.<sup>17</sup> The instance of gastric adenocarcinoma that is being reported defies standard diagnostic assumptions and highlights the importance of identifying unusual symptoms.<sup>3,6,8,18,19</sup>

The skeleton is a common metastatic site for certain tumors, including breast and prostate cancers. Bone involvement is unusual in gastric tumors.<sup>20</sup> Less frequently, gastric cancer invades the bone (0.9%–13.4%)<sup>21</sup> or the bone marrow (0.024%)<sup>14</sup>; this condition is typically noted as the disease advances rather than as the initial manifestation.<sup>22</sup> The most commonly reported sites of involvement when it comes to bones are usually the spine, pelvic bones, ribs, sternum, scapula, and skull and the lesion type maybe osteolytic, osteoblastic, or mixed.<sup>21</sup>

From published studies and a few case reports, low back pain is the masquerading presentation for gastric adenocarcinoma and usually, appears in advanced stages due to metastasis and not initial presentation of disease.<sup>7,8,14,15,23</sup> In this case, a 30-year-old male presented with low back pain and difficulty breathing. During the presentation, there was no family history of cancers especially in first-degree relatives. A clinical picture that assured the

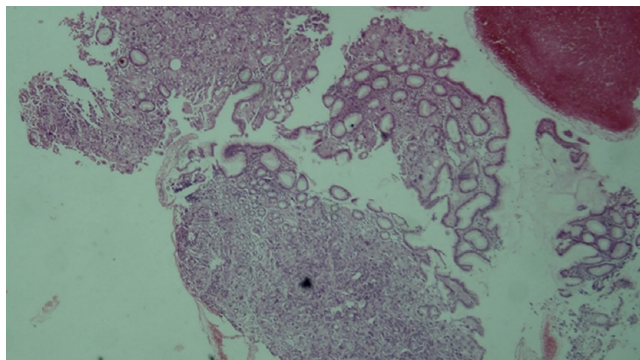


**FIGURE 1** Thoracic spine MRI sagittal view image showing marked anterior wedging collapse of T6 vertebral body with subsequent retro-pulsed bony fragment seen, associated effacing of the anterior epidural fat compressing the theca causing severe canal stenosis. There is burst fracture of the T10 vertebral body with loss of the anterior vertebral body height. The fracture line breaches both the anterior and superior vertebral body cortex.

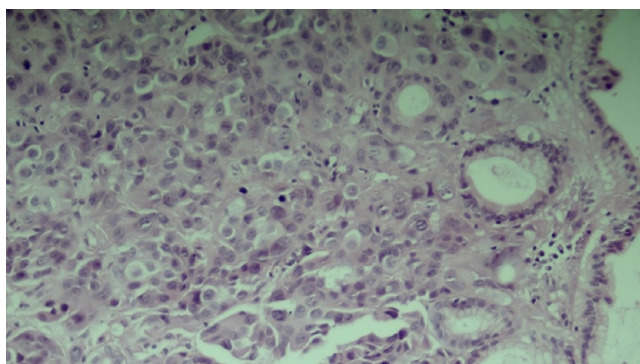


**FIGURE 2** Panel (A) CT chest axial view lung window at the level of the base of the lungs showing air and fluid collections seen within the anterosuperior part of the left pleural cavity keeping with hydropneumothorax. Also, there are multiple parenchymal lung nodules seen widely disseminated in both lung fields, notably in the basal segment. Panel (B) CT abdomen post-contrast axial view soft tissue window at the level of the liver showing multiple hypodense non-enhancing hepatic lesions of variable sizes scattered throughout the liver parenchyma, most likely keeping liver metastases.





**FIGURE 3** Tissue histology showing neoplastic cells infiltrating gastric stroma, suggestive of gastric adenocarcinoma. (H & E stain x4).

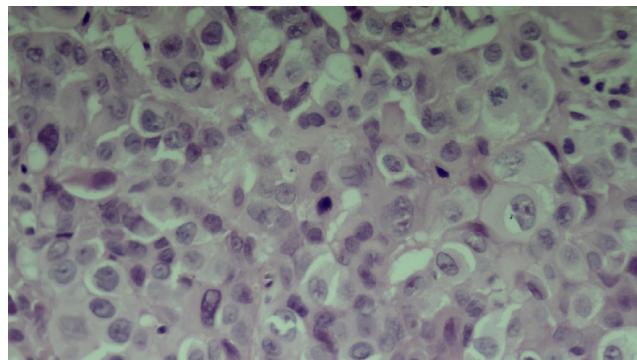


**FIGURE 4** Tissue histology shows neoplastic cells infiltrating gastric stroma, suggestive of gastric adenocarcinoma. (H & E stain x40).

primary care physician that tuberculosis was the most likely diagnosis. Following a poor response to tuberculosis chemotherapy, additional tests revealed advanced gastric adenocarcinoma. The delay in getting the correct diagnosis underscores the challenges of recognizing unusual presentations of gastric adenocarcinoma, particularly in young patients from infectious disease-endemic areas.<sup>7,14</sup> This is a learning point for physicians to be vigilant and aware of various clinical circumstances and consider modern imaging, including OGD to reveal concealed neoplastic processes.<sup>10,18</sup> This is especially important in areas where infectious diseases are common. A component of genetic testing is critical<sup>6,15,16,23</sup> However, the main challenge is its availability in resource-constrained environments such as Tanzania.

## 5 | CONCLUSION

Gastric adenocarcinoma with atypical presentation poses diagnostic challenges, especially in regions with prevalent infectious diseases. Low back pain and respiratory symptoms are red lights for clinicians to broaden differentials in



**FIGURE 5** Tissue histology in higher magnification showing neoplastic cells with eosinophilic cytoplasm and bizarre pleomorphic nuclei. (H & E stain x100).

younger patients. So, any patient with low back pain and other diffuse symptoms, indicating metastatic diseases from the gastrointestinal system should be suspected and investigated in detail.

## AUTHOR CONTRIBUTIONS

**Gidion Edwin:** Conceptualization; writing – original draft. **Yohana Mbishi:** Conceptualization; writing – original draft. **Francis Zerd:** Supervision; writing – review and editing. **Francisca Komanya:** Supervision; writing – review and editing. **Baraka Alphonse:** Supervision; writing – review and editing. **Emmanuel Sindato:** Supervision; writing – review and editing.

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## CONFLICT OF INTEREST STATEMENT

The authors declare there is no conflict of interest.



## DATA AVAILABILITY STATEMENT

The data that support the findings of this case report are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

## CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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## REFERENCES

- Ławniczak M, Gawin A, Jaroszewicz-Heigelmann H, et al. Analysis of clinicopathologic characteristics of gastric cancer in patients  $\leq 40$  and  $\geq 40$  years of age. *Scand J Gastroenterol*. 2020;55(1):62-66. doi:10.1080/00365521.2019.1699597
- Li J. Gastric cancer in young adults: a different clinical entity from carcinogenesis to prognosis. *Gastroenterol Res Pract*. 2020;2020:1-13. doi:10.1155/2020/9512707
- Hsu LW, Huang KH, Chen MH, et al. Genetic alterations in gastric cancer patients according to sex. *Aging*. 2021;13(1):376-388. doi:10.18632/aging.202142
- Machlowska J, Baj J, Sitarz M, Maciejewski R, Sitarz R. Gastric cancer: Epidemiology, risk factors, classification, genomic characteristics and treatment strategies. *Int J Mol Sci*. 2020;21(11):4012. doi:10.3390/ijms21114012
- Mabula JB, Mchembe MD, Koy M, et al. Gastric cancer at a university teaching hospital in northwestern Tanzania: a retrospective review of 232 cases. *World J Surg Oncol*. 2012;10(1):1-10. doi:10.1186/1477-7819-10-257/TABLES/6
- Smyth EC, Nilsson M, Grabsch HI, van Grieken NC, Lordick F. Gastric cancer. *Lancet*. 2020;396(10251):635-648. doi:10.1016/S0140-6736(20)31288-5
- Alhalabi MM, Alsayd SA, Albattah ME. Advanced diffuse gastric adenocarcinoma in young Syrian woman. A case report. *Ann Med Surg*. 2022;78:103728. doi:10.1016/j.amsu.2022.103728
- Niemeyer E, Mofid H, Zornig C, et al. Case report: acute abdominal pain in a 37-year-old patient and the consequences for his family. *BMC Gastroenterol*. 2020;20(1):1-6. doi:10.1186/s12876-020-01283-2
- Joharatnam-Hogan N, Shiu KK, Khan K. Challenges in the treatment of gastric cancer in the older patient. *Cancer Treat Rev*. 2020;85(January):101980. doi:10.1016/j.ctrv.2020.101980
- Xia JY, Aadam AA. Advances in screening and detection of gastric cancer. *J Surg Oncol*. 2022;125(7):1104-1109. doi:10.1002/jso.26844
- Lee JY. Diagnosis and treatment of extrapulmonary tuberculosis. *Tuberc Respir Dis*. 2015;78(2):47-55. doi:10.4046/TRD.2015.78.2.47
- Wu N, Zhang Y, Yu YS. Pedro Pons' sign of brucellar spondylitis. *Rev Soc Bras Med Trop*. 2020 Mar 16;53:e20190561. doi:10.1590/0037-8682-0561-2019
- Patel TH, Cecchini M. Targeted Therapies in Advanced Gastric Cancer. *Curr Treat Options in Oncol*. 2020;21(9):70. doi:10.1007/s11864-020-00774-4
- Petrillo A, Giunta EF, Pappalardo A, et al. Bone metastases from gastric cancer: What we know and how to deal with them. *J Clin Med*. 2021;10(8):1777. doi:10.3390/jcm10081777
- Choi JJ, Kook MC, Kim YI, et al. Helicobacter pylori therapy for the prevention of metachronous gastric cancer. *N Engl J Med*. 2018;378(12):1085-1095. doi:10.1056/nejmoa1708423
- Wang MCS, Huang J, Psf C, Choi P, Lao XQ, Chan SM. Global Incidence and Mortality of Gastric Cancer. *JAMA Netw Open*. 2021;4(7):1-14. doi:10.1001/jamanetworkopen.2021.18457
- Smyth EC, Verheij M, Allum W, Cunningham D, Cervantes A, Arnold D. Gastric cancer: ESMO clinical practice guidelines for diagnosis, treatment and follow-up†. *Ann Oncol*. 2016;27:v38-v49. doi:10.1093/ANNONC/MDW350
- Choi Y, Kim N, Kim KW, et al. Sex-based differences in histology, staging, and prognosis among 2983 gastric cancer surgery patients. *World J Gastroenterol*. 2022;28(9):933-947. doi:10.3748/wjg.v28.i9.933
- Joon C, Choi I, Jun J, et al. Impact of cardiorenal anemia syndrome on short- and long-term clinical outcomes in patients hospitalized with heart failure. *CardioRenal Medicine*. 2016;6(4):269-278. doi:10.1159/000443339
- Rucci N, Angelucci A. Prostate cancer and bone: the elective affinities. *Biomed Res Int*. 2014;2014:1-14. doi:10.1155/2014/167035
- Kim HS, Yi SY, Jun HJ, et al. Clinical outcome of gastric cancer patients with bone marrow metastases. *Oncology*. 2008;73(3-4):192-197. doi:10.1159/000127386
- Silvestris N, Pantano F, Ibrahim T, et al. Natural history of malignant bone disease in gastric cancer: final results of a multicenter bone metastasis survey. *PLoS One*. 2013;8(10):e74402. doi:10.1371/JOURNAL.PONE.0074402
- Choi JJ, Kim CG, Lee JY, et al. Family history of gastric cancer and helicobacter pylori treatment. *N Engl J Med*. 2020;382(5):427-436. doi:10.1056/nejmoa1909666

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