



## CASE REPORT

### Gastric Adenocarcinoma In A Young Adult Female

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#### **Abstract**

Malignancy is not frequently encountered among young adults and is thus at the bottom of the list of differential diagnoses. As a result, it can be overlooked or falsely diagnosed as another less-debilitating medical condition. A similar situation is presented in this paper. A young female presented with no risk factors or specific red-flag symptoms for malignancy, and the initial investigational findings strongly supported her presenting symptoms, which masked the main cause of her complaint.

**Keywords:** Abdominal pain, Adenocarcinoma, Biliary colic, Gallstones, Gastric cancer

#### **Introduction**

Abdominal pain is a common symptom in patients and is routinely encountered in daily clinical practice. The causes and list of differential diagnoses are broad and vast, so a preliminary or a provisional diagnosis can be made depending on the pain's severity, location, duration, and the presence of other associated symptoms.<sup>1</sup> Fortunately, due to the latest and non-invasive diagnostic tests and imaging modalities, it is now possible to rule out serious etiologies in a matter of hours. However, we should always focus on the red-flag symptoms in patients' medical histories, physical examinations, and initial laboratory values. A case is presented where evident physical symptoms were masked by other concomitant symptoms of similar nature and character.

#### **Case report**

A 30-year-old Bahraini female with a known case of Glucose – 6 Phosphate Dehydrogenase deficiency [G6PD] presented to our hospital with a history of abdominal pain associated with nausea for a duration of five months. The pain was predominantly in the right upper quadrant and radiated to the central back. It was intermittent in nature and aggravated by the intake of fatty food.

Epigastric tenderness with negative Murphy's sign was the only notable point upon physical examination. The results of laboratory blood investigations were normal at this stage, including a complete blood count, liver function test, renal function test, electrolytes, and inflammatory markers. Furthermore, an abdominal ultrasound was

performed, which showed multiple tiny gallstones without cholecystitis. This finding fairly explained the patient's experience of occasional biliary colic as a cause for her chronic intermittent abdominal pain at this stage. Accordingly, the patient underwent a laparoscopic cholecystectomy in the same month, with uneventful recovery.

After five months, the patient presented again with acute abdominal pain, and Computed Tomography (CT) of the abdomen was performed. The results suggested acute interstitial pancreatitis without necrosis or pseudocyst. Thus, the patient was admitted for further inpatient management. Magnetic Resonance Cholangiopancreatography (MRCP) was performed to investigate the cause of acute pancreatitis, which revealed choledocholithiasis of two stones measuring 3 and 4 mm each. Accordingly, Endoscopic Retrograde Cholangiopancreatography (ERCP) was performed for stone extraction, and the patient's symptoms fully resolved.

Three months later, the patient presented once more to the emergency department with severe abdominal pain, vomiting, and obvious severe jaundice. No fever and no change in bowel habits were noted. Table 1 shows the result of the blood test performed during the third presentation that was showing mild anaemia, with significant hyperbilirubinemia and liver function derangement.

MRCP was repeated and showed no stones in the common bile duct. However, a thick stomach wall was incidentally noted. Accordingly, a gastroscopy was performed, which revealed diffuse gastric body mucosal infiltration with stiffness. This was









highly suspicious for linitis plastica. Figure 1 shows images of the endoscopic findings. Accordingly, a biopsy was obtained and sent for histopathological study that confirmed the diagnosis of gastric adenocarcinoma. Table 2 presents the major histological findings. Finally, all investigational findings were explained to the patient, who chose to pursue treatment abroad, so follow-up contact was lost.

**Table 1:** Laboratory investigation of the patient during third admission

Parameter	Results	Unit	Reference range
White cell count	4.31	$\times 10^3/\text{ul}$	3.6-9.6
Haemoglobin	11.1	$\times \text{g/dL}$	12.3-15.3
Platelets	232	$\times 10^3/\text{ul}$	140-440
Albumin	28	$\text{g/l}$	38-50
Total Bilirubin	89	$\text{Umol/l}$	0-17
Direct Bilirubin	69	$\text{Umol/L}$	0-5
Indirect Bilirubin	20	$\text{Umol/L}$	0-17
Alkaline Phosphatase	542	$\text{IU/L}$	50-136
SGPT	316	$\text{IU/L}$	30-65
GGT	505	$\text{IU/L}$	5-55
Creatinine	66	$\text{Umol/L}$	53-118
Urea	2.9	$\text{mmol/L}$	3-7
C – Reactive Protein	4.2	$\text{mg/L}$	0-5
Lipase	118	$\text{U/L}$	30-190

SGPT; Serum Glutamic Pyruvic Transaminase

GGT; Gamma Glutamyl Transferase

Gastroscopy report		
Location	Finding	
	Oesophagus	Normal
	Oesophago-gastric Junction	40 cm
	Stomach	<b>Fundus:</b> Nodular mucosa with infiltration and stiffness. Hard on biopsy
		<b>Body:</b> Nodular mucosa with infiltration and stiffness. Hard on biopsy
		<b>Antrum:</b> Mild erythema
		<b>Pylorus:</b> Normal
	Duodenum	D1: Stiff with focal granularity
		D2: Stiff with focal granularity
	Impression	<ul style="list-style-type: none"> <li>• Diffuse gastric body mucosal infiltration with stiffness</li> <li>• To rule out linitis plastica</li> </ul>

**Figure 1:** Findings noted in gastroscopy

**Table 2:** Histopathological report

Biopsy report	
<b>Gastric sample</b>	<ul style="list-style-type: none"> <li>• Four pieces of gastric corpus mucosa showing focal erosion and mild chronic inflammation</li> <li>• In one piece at the deep aspect, there was a cluster of small epithelial cells that were partly crushed and similar in appearance to those in the duodenal biopsy</li> <li>• Mucin negative</li> <li>• <i>Helicobacter pylori</i>- negative</li> </ul>
<b>Duodenum sample</b>	<ul style="list-style-type: none"> <li>• Two pieces of duodenal mucosa showing focal erosion and mild chronic inflammation.</li> <li>• There was a cluster of small epithelial cells at one focus in the lamina propria and some similar epithelial cells were smeared along part of one biopsy surface</li> <li>• Mucin negative</li> <li>• <i>Helicobacter pylori</i>- negative</li> </ul>
<b>Result</b>	<ul style="list-style-type: none"> <li>• Gastric adenocarcinoma</li> <li>• Lauren Classification of Diffuse subtype</li> <li>• World Health Organization Classification of Poorly Cohesive Carcinoma</li> </ul>

## Discussion

Gastric cancer is considered the fifth most common type of cancer and the third leading cause of cancer death worldwide. A higher incidence is reported in older adults.<sup>1</sup> The Surveillance, Epidemiology, and End Result: Cancer Statistics Review [SEER] confirms that more than 95% of newly diagnosed cases were in patients above the age of 40 years.<sup>2,3</sup> Although the overall prevalence of gastric cancer has decreased in the past few decades, it has been noted that the rate has increased in younger adults.<sup>4</sup>

One study showed that 58% of young patients with gastric cancer do not present with alarm symptoms.<sup>5</sup> In this age group, physicians may be misled by general gastrointestinal symptoms such as epigastric pain, as in our case, thus causing a delay in the diagnosis. The present patient also had gallstones, which were consistent with the clinical picture of the presenting symptoms. This may have also been a contributing factor to the delay of the diagnosis.

Various risk factors of gastric cancer have been presented in epidemiological studies, including *H. pylori* infection, which is considered as the main etiological factor in gastric carcinogenesis, dietary habits (such as higher intake of beef and barbecued/smoked foods and a lower intake of fresh fruits/vegetables) and lifestyle factors (such as smoking and alcohol drinking) are highly consistent with the risk of gastric cancer. Hereditary factors include hereditary diffuse gastric cancer (HDGC), hereditary nonpolyposis colorectal cancer, and familial adenomatous polyposis.<sup>6</sup> None of these risk factors were present in our case. Considering gastric cancer as a differential diagnosis in young patients with gastro-intestinal symptoms is crucial in determining the disease early on.

There are two main classification systems for gastric carcinoma: World Health Organization and Lauren classification. Based on Lauren's criteria, gastric carcinoma is classified histologically as two major subtypes: intestinal and diffuse-type adenocarcinoma.<sup>7</sup> Both types exhibit numerous differences in pathology, epidemiology, and etiology. Clinically, the intestinal type of gastric cancer has been noted to occur more commonly in

elderly male patients. In contrast, the diffuse subtype of gastric cancer is predominantly associated with young female patients, as in our case.<sup>8</sup>

As for etiology, the two subtypes have dietary and environmental risk factors in common. However, the intestinal type is more associated with environmental factors, while the diffuse type usually has a genetic etiology.<sup>9</sup> In our case, no genetic or environmental risk factors were present. The World Health Organization classifies gastric adenocarcinoma into four major types: tubular, papillary, mucinous, and poorly cohesive carcinoma.<sup>10</sup> Other uncommon histological variants are also included in the classification system.

The management plan for gastric carcinoma can vary based on the stage of the disease. Surgical intervention (radical gastrectomy) remains the gold standard of treatment for gastric cancer. However, it is curative in less than 40 percent of cases.<sup>11</sup> Adjuvant radio-chemotherapy can be used to reduce the risk of recurrence or relapse and can improve the overall survival rate compared to surgery alone.<sup>11</sup> This treatment method should be considered for patients with a high risk of relapse. In advanced stages of the disease, palliative chemotherapy is used as a first-line treatment. However, no standard international regimen has been approved for palliative chemotherapy in advanced stages of gastric cancer.<sup>12</sup>

The prognosis of gastric cancer in young patients compared to older adults remains controversial. Some studies have shown poorer prognoses in young patients compared to older adults, while others have shown similar survival rates between the two groups. The overall survival rate for both groups is low despite advances in diagnosis and treatment. The 5-year survival rate is estimated to be less than 30%.<sup>13-15</sup>

## Conclusion

In conclusion, we have reported an unfortunate case of a young woman with an incidental finding of a thick stomach wall, that was discovered in Magnetic Resonance Imaging of the abdomen. Further investigation revealed an advance gastric adenocarcinoma. No data have been found regarding

the prevalence or incidence of gastric cancer among the young adult population in Bahrain.

Despite the availability of the latest imaging and investigational modalities, it remains important to take a detailed medical history and to conduct a comprehensive physical examination as a cornerstone of clinical practice.

### Conflict of Interest

All authors contributed equally to writing of this case report and the preparation of the final manuscript. The authors report no conflict of interest.

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