

Research Article

Retrospective review analyses of stomach metastasis from other malignancies

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Abstract

Background and objective: The diagnosis, course of treatment, and results of Gastric Metastases (GM) are reviewed in this study's literature. This study aimed to give clinicians a useful and dependable resource for comprehending stomach metastases resulting from different primary cancers and to convey the expanding body of knowledge in an understandable format.

Methods: Up until May 2022, articles published in English from the MEDLINE and Cochrane databases were taken into consideration for the systematic review. Posters, editorial letters, clinical photos, and non-English articles were not accepted. While direct tumor invasion and seeding were not included, Hematogenous and lymphogenic metastases were. Once the articles and abstracts had been examined and cross-referenced, the final selection was made using predetermined eligibility criteria.

Results: 186 GM patients were represented in 170 of the 1,521 publications that were ultimately found. The patients' average age was sixty-two. Gynecologic cancers accounted for the majority of GM cases (67), with lung cancer (33 patients), renal cancer (20 patients), and melanoma (19 patients) following closely behind. Resection surgery (n = 62), occasionally in conjunction with immunotherapy or chemotherapy (ChT), was one of the primary therapeutic modalities used for metastases. With n = 78, ChT was the second most popular treatment option. Additionally, following surgery and ChT, immunotherapy was one of the most popular treatment choices (n = 10).

Conclusions: Since 172 case reports from various journals were screened for inclusion in the systematic review, heterogeneity was unavoidable. Important details like a thorough follow-up or clinical data were overlooked in certain publications. Furthermore, quality assessment was not possible because all of the included articles were case reports. The majority of the 172 cases that were analyzed involved resection surgery, which was occasionally coupled with immunotherapy and Chat. There has to be more investigation into the optimum kind of treatment for patients with stomach metastases.

Keywords: Gastric Cancer, Stomach Cancer, Gastric Metastases.

1. Introduction

Stomach metastases are uncommon and have a poor prognosis. They can cause fatigue, nausea, vomiting, and lack of appetite, abdominal discomfort, and systemic symptoms. Based on clinical and autopsy results, the incidence of stomach metastases has been reported to be between 0.2-0.7 percent [1]. The originating site of the tumor is taken into account when planning treatment for gastric metastases, along with the kind and grade of the tumor. Gastrectomy is currently believed to be the only possible curative treatment for metastatic gastric cancer. Consequently, patients with multi-focal and higher-grade malignancies may also benefit from chemotherapy. The literature on the diagnosis, course of therapy, and results of stomach metastases is reviewed in this study.

Lymphatic drainage and blood supply are the main ways that metastatic illness from malignant tumors spreads. As a result, certain organs are far more likely than others to become metastases. Depending on the main tumor's kind and location, this is the case for the liver, lung, and loco regional lymph nodes. Although metastases can generally form at any location on the body, in the late disseminated stages of cancer, distant metastases typically occur more frequently. The stomach can house metastases from different malignancies but is often the source of metastatic disease, primarily from advanced gastric cancer. The main findings of stomach metastatic illness are summarized in this brief review.

By analyzing case reports of various primary tumors independently, taking into account diagnosis, treatment, and clinical presentation-which can differ from patient to patient depending on the primary site of the tumor-the study aimed to give clinicians a trustworthy and helpful resource for understanding gastric metastases resulting from a variety of primary tumors. It also presented the expanding body of literature in an easily readable format.

2. Methods

Regularity

Stomach metastases are an uncommon occurrence. It has been observed that the incidence varies between 0.2 and 0.7% in clinical and autopsy series [1, 2]. The majority of reports found in the literature deal with single case series or case presentations. This raises unanswered issues about the molecular processes of stomach metastases and the underlying pathophysiological state. Gastric metastases can spread by hematogenous dissemination, peritoneal dissemination, lymphatic infiltration, or direct invasion.

It has been noted that among primary tumor entities moving to the stomach, malignant melanoma (7%) lung cancer (23%), breast cancer (27%), and renal cell carcinoma (7.6%) are among the most common [3]. Moreover, leukemia and lymphoma infiltrations into the stomach are possible [3]

3. Endoscopic Results

It is common to see brownish or black flat or elevated patches or lesions on the mucosa in cases with malignant melanoma [4, 5]. Nonetheless, amelanotic melanoma metastases are typically pigmented, and stomach amelanotic metastases of primary melanoma have also been reported [6].

In addition, lesions may manifest as ulcers [2, 4]. Polypoid masses [8]. Or ulcerated projecting lesions [7, 9]. In contrast to the endoscopic categorization methods of gastric cancer, which make it easy to distinguish a gastric lesion from a metastasis, there is no characteristic pit pattern. This emphasizes the necessity of sufficient biopsy sampling to determine the precise nature of ambiguous stomach mucosal lesions [10].

Clinical presentation

According to a review by Namakwa and Yamasaki [3]. Patients with stomach metastases typically range in age from 56 to 71 years old, and there is an average 16–78 month interval between the initial diagnosis of cancer and the gastric metastases. It's interesting to note that gastric metastases of renal cell cancer and breast cancer happen later than the first tumor diagnosis (75.6 and 50–78 months, respectively).

Gastric metastases do not usually appear clinically. There have been reports of vomiting, dysphagia, and epigastric pain [7]. Many individuals with gastrointestinal hemorrhage are discovered by accident during staging endoscopies, which are carried out about a primary tumor that is known to exist or even in an attempt to find a primary tumor.

In a set of 37 instances, the median survival period following the discovery of stomach metastases was 3 months, with a range of 1 to 11 months. Individuals who experienced a single stomach metastasis had longer survival than those who experienced several metastases [7]. Nonetheless, the underlying tumor's nature and stage are the fundamental determinants of survival.

It is important to be aware of late-onset stomach metastases, which can appear years after a cancerous condition is first diagnosed. An instance of stomach metastases occurring 20 years after renal cell cancer was reported [12]. Twelve years after the original diagnosis, reported a stomach metastasis from uveal melanoma, reported a late prostate cancer metastasis with a nine-year latency [13, 14].

Counseling

Although they are typically isolated, gastric metastases can spread throughout the stomach, as in the case of malignant melanoma. Surgery is typically not used as a therapy for stomach metastases since they usually occur in the later stages of a malignant disease and require systemic chemotherapy for the main tumor. Endoscopy or surgery [15] are used to treat local problems such as bleeding or blockage to provide palliative care. Stents, or standard endoscopic hemostatic treatments, are the preferred means of treatment. When treating tumor types like renal cancer and colon cancer that may need metastatic surgery to improve the prognosis, gastric surgery should be taken into consideration. The evidence that the stomach metastasis is isolated and that a thorough diagnostic workup is, therefore necessary is the justification for surgery.

In comparison to patients with other original tumors, patients with gastric metastases have a longer life due to tailored chemotherapy regimens for breast cancer and renal cell carcinoma [3].

This Systematic Review Follows the Preferred

Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria. A computerized literature search was done up to May 2022 using the Cochrane and MEDLINE/PubMed databases [171].

For the search, the following set of keywords was used: {{{{gastric (Mesh Terms)} AND {neoplasm metastasis (Mesh Terms)}}} OR (gastric metastases)} OR (metastasis to the stomach). Filtering for "free full text" and "case reports" restricted the scope of the search. Two of the reviewers independently examined and retrieved each report following the team's judgment on the inclusion and exclusion criteria.

The study covered both Hematogenous and lymphogenic metastases; however, it did not include direct tumor invasion or seeding. Posters, editorial letters, clinical photos, and articles written in languages other than English were not accepted. Reviewers were grouped according to primary tumor location after the studies were screened and classified according to the inclusion and exclusion criteria. To gather data from studies of its particular area, such as metastasis

from lung malignancies or gynecologic cancers, each group had two reviewers.

The following data was taken from the databases: first author, the total number of cases, age, sex, primary tumor site, histology and treatment of the primary tumor, metastasis treatment, the clinical presentation of gastric metastases (GM), synchronous or metachronous GM, the interval between primary and secondary GM, diagnostic procedures, other metastases, and overall survival.

The discussion part of the paper mentions that bias risk assessment was not conducted because the study solely consisted of screening case reports.

4. Results

Reporting Items for Systematic Reviews and Meta-Analyses present in Figure 1

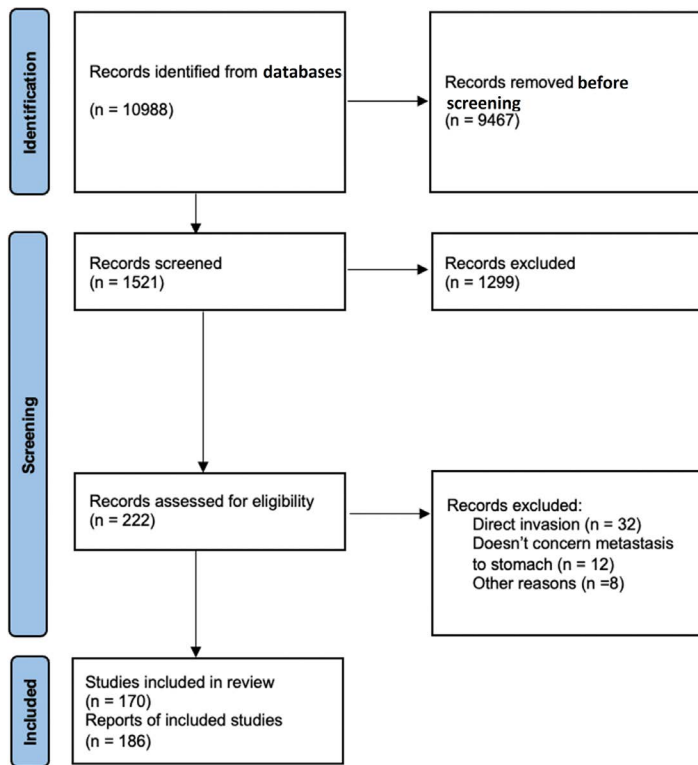


Figure 1

The prism flow chart provides information about data collection.

Out of a total of 1,521 publications that were found, only 170 were included in the study. These 170 publications represented 186 patients with GM, of which 101 were female and 85 were male. The age of the patients ranged from 55 to 62

years old with an IQR of 55-70.5. The most common cancer type that produced GM was gynecologic cancer, including breast cancer, and it affected 66 patients. Lung cancer, renal cancer, and melanoma were followed by 33, 20, and 19 patients respectively (Figure 2). The findings are displayed based on where the original tumor originated. The most popular treatment for metastasis was resection surgery, which involved various methods such as total, subtotal, or partial gastrectomy, wedge gastrectomy, radical total gastrectomy with Roux-en-Y, and laparoscopic resection of gastric metastasis. Sometimes, resection surgery was combined with immunotherapy or chemotherapy. The second most popular form of treatment was chemotherapy, which was used in 78 cases. Immunotherapy was also a popular treatment choice, in conjunction with surgery and chemotherapy, and was used in 10 cases.

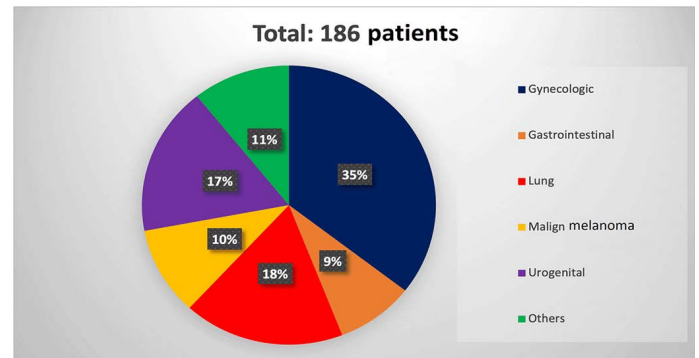


Figure 2: Prevalent Cancer Type Producing Gm.

Gynecological metastasis

Of the 66 patients, 57 were the median age. 46 patients in total developed metastases other than GM. Metastasis most frequently occurs in the bone. No additional metastases were found in five patients. In the breast group, there were 54 instances in all, and one patient was male. The youngest patient in the breast group was 36 years old, while the oldest patient was 84 years old. The median age of the group is 56. Among ovarian and uterine cancers, invasive lobular carcinoma (ILC) accounted for the greatest number of individuals. Thirteen patients in all had ILC upon presentation. Nine patients in the ovarian group, with a median age of 61, were included. At 73 years old, the oldest patient was the youngest, at 47 years old. Two patients, ages 49 and 80, were in the uterine group. Surgery was not always as effective as systemic medication. Palliative care includes some surgical procedures. Chemotherapy was most often used as a systemic treatment. Only 25 cases provided an overall survival rate, which may be anything from a few days to nine years. Out of all the patients, six are still living. The included studies' conclusions about gynecologic malignancies are summarized in Tables 1 [2-56].

Table 1: Data about Metastases from Gynecologic Cancers

First author	No of cases	Age	Sex	Site of primary tumor	Histology type of primary	Treatment of primary	Treatment of metastasis	Clinical presentation of GM
Fousekis et al. ²	1	64	F	Breast	Lobular Ca	ChT	ChT	Dysphagia, dyspepsia
Watanabe et al. ³	1	71	F	Breast	Ductal Ca	Mastectomy and axillary lymph adenectomy, ChT	Endocrine therapy	Asymptomatic
Husain et al. ⁴	1	47	F	Left breast	Ductal Ca	Neoadjuvant ChT, mastectomy with a left axillary lymph adenectomy, adjuvant endocrine therapy	N/S	Dyspepsia, weight loss, vomiting
Zhang et al. ⁵	1	46	F	Bilateral breast	Lobular Ca	N/A	N/A	Epigastric discomfort
Jabi et al. ⁶	1	60	F	Right breast	Lobular Ca	Palliative ChT	Palliative ChT	Epigastralgia, gastric bleeding, Anemia
Johnson et al. ⁷	1	50	F	Breast	Ductal Ca	Lumpectomy, adjuvant RT, ChT	N/S	N/S
Okamoto et al. ⁸	1	51	F	Breast	Ductal Ca	ChT	ChT	Melena, pre-syncope
Nehmeh et al. ⁹	1	58	F	Right breast	Ductal Ca	Right modified mastectomy, left prophylactic mastectomy, adjuvant ChT	N/S	Perforated ulcer
Hanafiah et al. ¹⁰	1	71	F	Left breast	Lobular Ca	Left mastectomy, axillary clearance, ChT, RT	Ch	Hoarseness, weight loss, early satiety
Teixeira et al. ¹¹	1	40	F	Right breast	Lobular Ca	Neoadjuvant ChT, RT, conservative surgery for right breast and right axillary lymph node	Total gastrectomy	Nausea, epigastric discomfort, early satiety, weight loss
Kutasovic et al. ¹²	1	52	F	Left breast	Invasive Ca of no special type	Local excision, adjuvant RT, ChT, hormone therapy	Subtotal gastrectomy	N/S
Abdallah et al. ¹³	1	53	F	Breast	Lobular Ca	ChT, hormone therapy	N/S	Abdominal pain, diffuse tenderness, abdominal distention
Liu et al. ¹⁴	1	82	F	Left breast	Phyllodes tumors	Total mastectomy for recurrent tumor local excision, RT	Excision surgery, RT	Anemia, melena
Tang et al. ¹⁵	1	67	F	Left breast	Ductal Ca	Left breast-conserving surgery, axillary lymphadenectomy, adjuvant ChT, RT	N/S	Stomach pain
De Gruttola et al. ¹⁶	1	61	F	Breast	Lobular Ca	Mastectomy, adjuvant ChT, RT	Total gastrectomy due to gastric perforation	Gastric perforation
Mohy-Ud-Din et al. ¹⁷	1	83	F	Breast	Lobular Ca	Mastectomy, sentinel lymph nodes excision, adj. ChT	N/A	Nausea, vomiting

Güler et al. ¹⁸	1	42	F	Breast	Ductal Ca	N/A	Total gastrectomy due to gastric perforation, ChT	Acute Abdomen
Cui et al. ¹⁹	1	42	F	Endometrium	Endometrial Aca	Total hysterectomy, bilateral salpingo-oophorectomy, pelvic and para-aortic lymphadenectomy	Neoadjuvant ChT, partial gastrectomy	N/S
Asmar et al. ²⁰	1	84	F	Breast	Lobular Ca	Left mastectomy, adjuvant ChT, RT, hormone therapy	Hormone therapy	Dyspepsia
Klair et al. ²¹	1	60	F	Ovary	Ovarian granulosa cell tumor	Total hysterectomy, bilateral salpingo-oophorectomy	N/A	Reflux, abdominal pain, nausea, anorexia
Yang ²²	1	47	F	Ovary	Ovarian serous cystadenocarcinoma	Total hysterectomy, bilateral salpingo-oophorectomy, pelvic and paraaortic lymphadenectomy, total omentectomy	Laparoscopic resection, adjuvant ChT	Abdominal pain
Bushan et al. ²³	1	68	F	Left breast	Lobular Ca	Wide excision of breast lesion, ChT, RT, hormone therapy	Distal gastrectomy with D2 lymphadenectomy, left axillary excision, ChT	Weight loss, dysphagia
Zhang et al. ²⁴	2	45	F	Breast	Lobular Aca	Lumpectomy, RT, ChT	N/S	N/S
		64	F	Breast	Lobular Aca	N/A	N/A	Weight loss
Jin et al. ²⁵	1	55	F	Breast	Lobular Ca	Neoadjuvant ChT, radical mastectomy, ChT, RT	ChT	N/S
Buka et al. ²⁶	1	58	F	Breast	Invasive lobular Ca	ChT, hormone therapy, RT	Neoadjuvant ChRT, total gastrectomy, adjuvant ChT	Abdominal pain, weight loss
Dória et al. ²⁷	1	66	F	Breast	Invasive lobular Ca	Letrozole	Total gastrectomy, lymphadenectomy, esophagojejunostomy with a Roux loop technique	Epigastric pain, vomiting, weight loss
Hwangbo et al. ²⁸	1	73	F	Ovary	Serous Aca	Cytoreductive surgery, adjuvant ChT	Distal gastrectomy with Billroth I anastomosis, lymphadenectomy	Epigastric pain, dyspepsia
Shetty et al. ²⁹	2	56	F	Breast	Invasive ductal Ca	Breast conservation therapy, adjuvant ChT	ChT	Epigastric discomfort, non-bilious vomiting
		61	F	Breast	Invasive ductal Ca	Left breast modified radical mastectomy, adjuvant RT	Palliative ChT	Abdominal pain, melena, abdominal distension
Geredeli et al. ³⁰	1	47	F	Breast	Invasive lobular Ca	Palliative ChT	Subtotal stomach resection, ChT	Asymptomatic

Kim et al. ³¹	1	58	F	Ovary	Serous Aca	Total hysterectomy with salpingo-oophorectomy, lymphadenectomy with total omentectomy, adjuvant ChT	Subtotal gastrectomy, lymphadenectomy, ChT	Asymptomatic
Fernandes et al. ³²	1	51	F	Breast	Invasive lobular Ca	Quadrantectomy, adjuvant ChT, adjuvant RT, hormone therapy	Total gastrectomy, adjuvant ChT, hormone therapy	Dyspepsia
Moldovan et al. ³³	1	49	F	Cervix uteri	SCC	Surgery, ChRT	Subtotal gastrectomy, lymphadenectomy D2, anastomotic layout shaped as Y Roux, omentectomy, adjuvant ChRT	Pyloric stenosis, epigastric pains, late postprandial emesis, weight loss
Zhou and Miao ³⁴	1	61	F	Ovary	Serous Aca	Optimal debulking cytoreductive surgery, adjuvant ChT	Gastric antrectomy	Asymptomatic
Critchley et al. ³⁵	1	62	F	Breast	Invasive lobular Ca	Mastectomy, level 2 axillary clearance, adjuvant ChT, adjuvant RT, adjuvant hormone therapy	ChT	Loose stool, normocytic anemia, weight loss
Hara et al. ³⁶	1	74	F	Breast	Invasive ductal Ca	Breast-conserving surgery	Paclitaxel	Chronic gastritis
Ciulla et al. ³⁷	1	70	F	Breast	Lobular Ca	Postoperative hormone therapy	Total gastrectomy, lymphadenectomy R1, esophagojejunostomy with Roux loose technique	Asymptomatic
Jones et al. ³⁸	2	51	F	Breast	Lobular Ca	Wide local excision, axillary dissection, adjuvant RT	Total gastrectomy with Roux-en-Y reconstruction, hormone therapy	Weight loss, epigastric pain
		61	F	Breast	Lobular Ca	Mastectomy, axillary dissection, adjuvant ChT, RT, tamoxifen	ChT, RT	Progressive dysphagia, weight loss
Yim et al. ³⁹	1	48	F	Breast	SRCC	ChT	ChT	Epigastric discomfort
Wong et al. ⁴⁰	1	72	F	Breast	Invasive lobular Ca	Wide local excision, adjuvant RT	Hormone therapy	Acute abdomen, rebound tenderness, generalized peritonitis

Ricciuti et al. ⁴¹	1	65	M	Breast	Invasive ductal Ca	Total mastectomy, complete axillary dissection, adjuvant hormone therapy	Gastrectomy with Roux-en-Y esophagojejunostomy anastomosis	Hematemesis, epigastric pain
Fernandes et al. ⁴²	4	56 (the mean age)	F	Breast	Invasive lobular Ca	ChT, hormone therapy	Total gastrectomy	Ulcerated lesion, major bleeding
		56 (the mean age)	F	Breast	Invasive lobular Ca	ChT, RT, hormone therapy	ChRT	Diffuse infiltration
		56 (the mean age)	F	Breast	Invasive ductal Ca	ChT, hormone therapy	ChT	Infiltrative, ulcerated, stenotic lesion
		56 (the mean age)	F	Breast	Invasive ductal Ca	ChT, hormone therapy	ChRT	Flat erosive lesion
Zullo et al. ⁴³	3	49	F	Ovary	Serous Aca	Hysterectomy, bilateral salpingo-oophorectomy, pelvic lymphadenectomy, adjuvant ChT	ChT	Abdominal pain, vomiting, weight loss
		80	F	Cervix uteri	Leiomyosarcoma	Total hysterectomy, bilateral salpingo-oophorectomy, pelvic lymphadenectomy, adjuvant ChT	N/A	Epigastric pain
		70	F	Breast	N/A	Radical left mastectomy, adjuvant ChT	ChT	Dysphagia, epigastric pain
Villa Guzman et al. ⁴⁴	1	58	F	Breast	Invasive lobular Ca	Quadrantectomy, lymphadenectomy, adjuvant ChT, RT	ChT, hormone therapy	Nausea, epigastric pain
Mizuguchi et al. ⁴⁵	1	71	F	Ovary	Serous Aca	Total hysterectomy, bilateral salpingo-oophorectomy, omentectomy, ChT	ChT, hormone therapy	Asymptomatic
Jmour et al. ⁴⁶	4	51	F	Breast	Mixed	Radical mastectomy with lymphadenectomy	ChT, RT	Nausea, vomiting, abdominal pain
		47	F	Breast	Lobular infiltrating Ca	Radical mastectomy with lymphadenectomy	ChT, RT	Nausea, vomiting, abdominal pain
		51	F	Breast	Ductal infiltrating Ca	N/A	ChT, RT	Nausea, vomiting, abdominal pain
		36	F	Breast	Lobular infiltrating Ca	Radical mastectomy with lymphadenectomy	ChT, RT	Nausea, vomiting, abdominal pain

Yim ⁴⁷	1	65	F	Breast	Invasive lobular Ca	Modified radical mastectomy, adjuvant ChT, adjuvant RT	ChT	Dyspepsia, anorexia, indigestion, epigastric discomfort, early satiety, weight loss
Choi et al. ⁴⁸	1	44	F	Breast	Phyllodes tumor	Right lumpectomy, axillary lymph-adenectomy, RT, right total mastectomy	Endoscopic hemostasis with cauterization	Dizziness, anemia, melena
Khan et al. ⁴⁹	1	56	F	Breast	Signet ring Aca	ChT	ChT	Anemia
Mullally et al. ⁵⁰	1	46	F	Breast	Invasive ductal Ca	Left mastectomy, adjuvant ChT, hormone therapy, RT	Palliative laparoscopic gastroduodenostomy, hormone therapy, palliative ChT	Epigastric and left shoulder pain, epigastric tenderness, upper abdominal rigidity
Kliiger and Gorbaty ⁵¹	1	60	F	Breast	Invasive ductal Aca	Systemic therapy, ChT	N/A	Nausea, diarrhea, vomiting, weight loss
Antonini et al. ⁵²	1	61	F	Ovary	Serous Ca	ChT, cytoreductive surgery	ChT	Dyspepsia
Kono et al. ⁵³	1	64	F	Ovary	Mucinous Ca	Bilateral salpingo-oophorectomy, simple hysterectomy, pelvic and para-aortic lymphadenectomy, partial omental resection	ChT	Back pain
Kim et al. ⁵⁴	1	39	F	Breast	Invasive lobular Ca	Right breast-conserving surgery, lymph-adenectomy	Duodenal stent, systemic ChT	Upper abdominal discomfort and pain, indigestion
Woo et al. ⁵⁵	1	51	F	Breast	Invasive lobular Ca	Bilateral modified radical mastectomy, ChT, RT	Radical subtotal gastrectomy with Billroth II anastomosis, D2 lymph-adenectomy, ChT	Epigastric pain
Ulmer et al. ⁵⁶	1	55	F	Breast	Invasive lobular Ca	Bilateral mastectomy, adjuvant ChT, RT, hormone therapy	Palliative pyloric stent	Nausea, vomiting, early satiety, weight loss

Cancer of the Gastrointestinal Tract

The 16 patients (11 men and 5 women) ranged in age from 22 to 85 years old, with a median age of 69. The seven individuals for whom data were available had overall survival times ranging from two to sixteen months. Despite this, three cases' survival went unreported, leaving six cases alive. The most prevalent histological type of gastrointestinal malignancy was adenocarcinoma (Adeno Ca), which affected seven patients. Hepatocellular cancer (HCC) and squamous cell carcinoma (two cases) were the next most common histological kinds. The most commonly used technique for

diagnosing metastases is endoscopy. Other diagnostic techniques included endoscopic ultrasound, positron emission tomography computed tomography (PET-CT), and computer tomography (CT). A laparotomy and biopsy were performed on one subject. Nine of these individuals underwent surgery, based on this research. One patient had Trans catheter left gastric artery embolization. Conversely, one patient underwent palliative radiation, while seven others underwent chemotherapy. However, nobody knows about one sufferer. Table 2. Provides an overview of the data about gastrointestinal cancers [57–72].

Table 2. Data Illustrating the Metastasis of Gastrointestinal Malignancies

First author	No of cases	Age	Sex	Site of primary tumor	Histology type of primary	Treatment of primary	Treatment of metastasis
Iwai et al. ⁵⁷	1	76	F	Transverse colon	Poorly differentiated Aca with a partial component of signet-ring Ca	ChT	ChT
Yang et al. ⁵⁸	1	74	F	Head of pancreas	Poorly differentiated invasive Aca	ChT	ChT
Lee and Lee ⁵⁹	1	82	M	Right colon	Moderately differentiated Aca	Extended right hemicolectomy (declined adjuvant ChT)	Radical total gastrectomy (declined adjuvant ChT) with Roux-en-Y and D2 dissection
Rothermel et al. ⁶⁰	1	61	M	Body of pancreas	Well-differentiated ductal Aca	Distal pancreatectomy, splenectomy, adjuvant ChT	ChT, palliative radiation, and wedge gastrectomy
Terashima et al. ⁶¹	1	61	F	Transverse colon	Poorly differentiated Aca	Extended right hemicolectomy, ChT	Partial gastrectomy and D3 dissection, ChT
Sasajima et al. ⁶²	1	72	M	Head and tail of pancreas	IPMN	ChT	ChT (terminated after 2 courses)
Tomonari et al. ⁶³	1	78	M	Body and distal pancreas	Moderately differentiated Aca T3N0M0	Surgery, adjuvant ChT	Subtotal gastrectomy
Adachi ⁶⁴	1	67	F	Pancreas	Well-differentiated SCC	Distal pancreatectomy and splenectomy	Total gastrectomy
Nakazawa et al. ⁶⁵	1	59	M	Esophagus	Mucosal SCC	Subtotal esophagectomy, left lateral segmentectomy of liver, pancreatosplenectomy, adjuvant ChT	Proximal gastrectomy
Abouzieed et al. ⁶⁶	1	69	M	Liver	HCC	Right hepatectomy	ChT
Ito et al. ⁶⁷	1	78	M	Liver	ICC	Lateral hepatectomy	Proximal gastrectomy and lymphadenectomy

Imai et al. ⁶⁸	1	62	M	Liver	HCC	N/A	Transcatheter left gastric artery embolization
Kim et al. ⁶⁹	1	75	M	Liver	HCC	Right hemihepatectomy, TACE	Gastric wedge resection
Peng et al. ⁷⁰	1	22	M	Liver	HCC	Right hemihepatectomy combined with left lateral tumor local resection, cholecystectomy, splenectomy	Gastric tumor local resection
Kanthan et al. ⁷¹	1	85	M	Colon	Aca	N/A	N/A
Wang et al. ⁷²	1	63	F	Gallbladder	Melanoma	Surgery, ChT	ChT

Cancer of the Lung

The 33 patients' ages ranged from 39 to 78 years old, with a median age of 62 (25 males and 8 females). In addition to stomach metastases, 27 out of the total cases had additional ones. The data provided for the 22 patients showed a survival duration ranging from two weeks to thirty months. However, four and five years after metastases were discovered, respectively, two individuals were still alive. The most common histological form of primary lung malignancies that results in stomach metastases was adenocarcinoma, which was diagnosed in 13 individuals. Small cell lung cancer (SCLC) and squamous cell carcinoma (SCC) were the next

most common histological kinds. Different combinations of chemotherapy were the most often chosen course of treatment for GM (15 cases). Conversely, out of all the instances, seven underwent surgery (one for an esophagogastrectomy, two total, and four for partial gastrectomies). However, one guy was not eligible for any gastrointestinal treatment because his metastasis was discovered only after an autopsy. In addition, the treatment for six other cases is unknown, and one patient declined all metastatic care. Table 3. [73–102] provides an overview of the data about GM resulting from primary lung tumors.

Table 3. Illustrative statistics about lung cancer metastases

First author	No of cases	Age	Sex	Site of primary tumor	Histology type of primary	Treatment of primary	Treatment of metastasis
Catalano et al. ⁷³	1	78	M	Lung - right upper lobe	Poorly differentiated Aca	Upper right lobectomy	Total gastrectomy
Shih-Chun et al. ⁷⁴	1	55	M	Lung - right upper lobe	NSCLC	Concurrent chemoradiotherapy	Palliative total gastrectomy, ChT
Das Majumdar et al. ⁷⁵	1	72	M	Lung	Poorly differentiated Aca	Palliative RT	Immunotherapy, ChT
Liu et al. ⁷⁶	1	58	M	Lung	Aca	Middle right lobectomy, neoadjuvant therapy, ChT	ChT, partial gastrectomy
Nemoto et al. ⁷⁷	1	64	M	Lung - right lower lobe	SCC	Adjuvant ChT	Esophagogastrectomy
He et al. ⁷⁸	1	61	M	Lung	SCLC	Left lower lobectomy	Cardia resection
Yang et al. ⁷⁹	1	59	M	Lung - left upper lobe	Poorly differentiated metastatic carcinoma	ChT	Anti-PD1 immunotherapy
Li et al. ⁸⁰	1	61	M	Lung - right lower lobe	SCC	ChT	ChT, gastrectomy
Bhardwaj et al. ⁸¹	1	39	F	Lung	SCC	ChT, nivolumab	RT
Badipatla et al. ⁸²	1	65	M	Lung	Aca	ChT, palliative care	ChT, palliative care
Qasrawi et al. ⁸³	1	69	F	Lung - left upper lobe	Aca	RT	Hospice care
Kim et al. ⁸⁴	1	70	F	Lung	Pleomorphic carcinoma	Right bronchial artery embolization, right upper lobectomy, adjuvant ChT	Partial gastrectomy, immunotherapy

Maeda et al. ⁸⁵	1	60	F	Lung	SCLC	ChT	N/A
Struyf et al. ⁸⁶	1	68	M	Lung	Aca	ChT	ChT
Altintas et al. ⁸⁷	1	55	M	Lung	Aca	ChT	ChT
Casella et al. ⁸⁸	1	63	M	Lung	SCLC	Supportive care	Supportive care
Ohashi et al. ⁸⁹	1	62	M	Lung	Large cell carcinoma	Right upper lobectomy	ChT
Aokage et al. ⁹⁰	2	69	M	Lung - right upper lobe	Pleomorphic carcinoma	Right upper lobectomy, parietal pleura resection	Partial gastrectomy, splenectomy
		62	M	Lung - left upper lobe	Pleomorphic carcinoma	Left upper lobectomy	Distal gastrectomy, splenectomy
Katsenos and Archondakis ⁹¹	1	61	M	Lung - left upper lobe	Aca	ChT	ChT
Diem et al. ⁹²	1	62	F	Lung - right upper lobe	Aca	N/A	ChT
Hu et al. ⁹³	1	54	M	Lung	SCC	RT, right middle lobectomy	None (patient refused)
Koh et al. ⁹⁴	1	46	M	Lung	Pleomorphic carcinoma	Antibiotics	N/A
Hung et al. ⁹⁵	1	47	M	Lung	SCC	RT, ChT	ChT
Taira et al. ⁹⁶	1	64	M	Lung	Pleomorphic carcinoma, Aca	Left upper lobectomy	ChT
Gao et al. ⁹⁷	1	66	M	Lung	SCLC	ChT	ChT, supportive care
Kim et al. ⁹⁸	1	68	M	Lung	Poorly differentiated Aca	Left lower lobectomy, posterior segmentectomy right upper lobe (2004), left upper lobe wedge resection (2007), palliative chemotherapy	Palliative ChT
Chen et al. ⁹⁹	1	59	F	Lung	Sarcomatoid carcinoma	Supportive treatment	Supportive treatment
Dong et al. ¹⁰⁰	1	60	F	Lung	Glomus tumor	N/A	N/A
Kim et al. ¹⁰¹	2	66	M	Lung	SCLC	N/A	N/A
		68	M	Lung	SCLC	N/A	N/A
Del Rosario et al. ¹⁰²	1	77	F	Lung	Aca	ChT	Palliative care
Kanthan et al. ⁷¹	1	75	M	Lung	Aca	N/A	N/A

Adverse Melanoma

The 19 patients (seven females and 12 males) ranged in age from 28 to 89 years old, with a median age of 67. In addition to malignant melanoma, additional organ metastases were found in 16 cases. In ten cases, there was no mention of overall survival. One patient passed away after a year, and the other two cases died two and four days after being admitted to the hospital, respectively. In addition, two of these individuals were still alive after six months and five years, respectively. Three patients have an overall survival of three, twenty-seven, and four months, respectively. Of these patients, one did not receive treatment, and one refused it. On the other hand, six patients received immunotherapy, five

underwent surgery, two received radiotherapy, and three received simply supportive care. Furthermore, in three cases, the therapy of GM was not mentioned. The results of the included studies on malignant melanoma are summarized in Table 4 [103–121].

Endoscopic Findings

In malignant melanoma, it is a usual finding that the mucosa presents with brownish or black flat or elevated areas or lesions [4, 5]. However, metastases of amelanotic melanoma are usually pigmented, and amelanotic metastases of primary amelanotic melanoma have been described in the stomach as well [1].

Table 4. Data That Demonstrate the Spread of Malignant Melanoma

First author	No of cases	Age	Sex	Site of primary tumor	Histology type of primary	Treatment of primary	Treatment of metastasis
Zhu et al. ¹⁰³	1	36	M	Right plantar	Nodular	Mohs micro-surgery	N/A
Yoshimoto et al. ¹⁰⁴	1	82	F	Fourth left toe	Acral lentiginous	Surgery	Palliative RT
Okamoto et al. ¹⁰⁵	1	79	M	Esophagus	Pigmented submucosal tumor-like growth in the esophagus	Nivolumab	Nivolumab
Cortellini et al. ¹⁰⁶	1	81	M	N/A	N/A	N/A	N/A
Groudan et al. ¹⁰⁷	1	66	F	Vulva	N/A	N/A	Palliative RT, immunotherapy
Syed et al. ¹⁰⁸	1	49	F	Back	N/A	Surgery	Immunotherapy, supportive care, SRS
Genova et al. ¹⁰⁹	1	80	M	Scalp	Lentigo	RT	Immunotherapy
Wong et al. ¹¹⁰	1	81	F	Foot	Acral lentiginous	Amputation, CT	Denied the treatment
Grander et al. ¹¹¹	1	67	M	Right hypochondrium, back, scalp	Superficial spreading	Surgery	Total gastrectomy, radiosurgery
Carcelain et al. ¹¹²	1	65	F	N/A	N/A	Surgery	Surgery
Lestre et al. ¹¹³	1	67	M	Lower back	Superficial spreading	Excision, adjuvant immunotherapy	No
Rana et al. ¹¹⁴	1	72	M	N/A	N/A	N/A	N/A
Rovere et al. ¹¹⁵	1	68	M	N/A	N/A	N/A	Supportive care
Eivazi-Ziaei et al. ¹¹⁶	1	56	M	Right heel-ALM	N/A	Surgery	Supportive care
El-Sourani et al. ¹¹⁷	1	43	F	Right breast	N/A	Surgery	Sleeve gastrectomy after atypical resection, complete locoregional lymphadenectomy
Buissin et al. ¹¹⁸	1	63	M	Anorectal	Hyperplastic polyp	Abdominoperineal resection	Supportive care
Bankar et al. ¹¹⁹	1	41	F	N/A	N/A	N/A	Surgery
Mohan et al. ¹²⁰	1	28	M	N/A	N/A	N/A	Temozolomide
Farshad et al. ¹²¹	1	89	M	Chest wall	N/A	Local excision	Nivolumab

Urogenital metastasis

Of the twenty patients with kidney cancer, nine were female and eleven were male; the median age was 68.5. Metastases other than GM were present in 11 patients in total. Four instances had an overall survival rate of two months to one year which was noted. Nine gastrectomies and four endoscopic mucosal resections, four chemotherapy sessions, and one radiotherapy session were administered to the 20 patients, leaving one patient without any form of treatment for GM. The median age of those affected by prostate cancer was 67

years old. Three patients underwent mucosal resection, four received chemotherapy, and one patient declined GM treatment. Three patients, whose durations ranged from four to 19 months, had overall survival reports. In addition to receiving chemotherapy, two of the four testis cancer patients also had additional metastases. The patient in one trial was referred to palliative care and had bladder cancer without any further metastases. A summary of data about stomach metastases resulting from primary urogenital malignancies can be seen in Table 5 [71, 122–151].

Table 5. Data Illustrating Urogenital Carcinoma Metastases

First author	No of cases	Age	Sex	Site of primary tumor	Histology type of primary	Treatment of primary	Treatment of metastasis	Clinical presentation of GM
Tapasak and Mcguirt ¹²²	1	77	M	Kidney	RCC	Nephrectomy, ChT	Roux-en-Y gastric bypass	Gastrointestinal bleeding, anemia
Podzolkov et al. ¹²³	1	30	M	Testis	Choriocarcinoma	ChT	N/A	Epigastric pain, dyspnea
Koterazawa et al. ¹²⁴	1	70	F	Kidney	RCC	Nephrectomy	Endoscopic submucosal resection	Weight loss
Hakim et al. ¹²⁵	1	86	F	Kidney	RCC	Nephrectomy, ChT	RT	Gastrointestinal bleeding
Yoshida et al. ¹²⁶	1	85	F	Kidney	RCC	Nephrectomy	Endoscopic resection	Anemia, melena
Bernshteyn et al. ¹²⁷	1	68	M	Kidney	RCC	Nephrectomy	N/A	Dyspnea, melena
Weissman et al. ¹²⁸	2	70	M	Kidney	RCC	Nephrectomy	ChT	Dyspepsia, malaise, weight loss
		85	M	Kidney	RCC	Nephrectomy	ChT	Dyspepsia, malaise, weight loss
Chaar et al. ¹²⁹	1	30	M	Testis	Choriocarcinoma	Orchiectomy	ChT (patient refused)	Melena, anemia
Arakawa et al. ¹³⁰	1	80	F	Kidney	RCC	ChT	ChT	Anorexia, pyrexia, malaise
Uehara et al. ¹³¹	1	73	M	Kidney	RCC	Nephrectomy, ChT	Endoscopic mucosal resection, immunotherapy	Gastric mass
O'Reilly et al. ¹³²	1	59	F	Kidney	Clear cell RCC	Nephrectomy	Laparoscopic sleeve gastrectomy	Asymptomatic
Abu Ghanimeh et al. ¹³³	1	67	M	Kidney	Clear cell RCC	Nephrectomy	No treatment initiated	Gastrointestinal bleeding
Mazumdar et al. ¹³⁴	1	49	M	Testis	Seminoma	N/A	N/A	Abdominal pain
Barras et al. ¹³⁵	1	53	M	Kidney	RCC	Nephrectomy	Partial gastrectomy	Hematochezia
Riviello et al. ¹³⁶	1	68	M	Kidney	RCC	Nephrectomy	Gastrectomy, ChT	Melena, postural dizziness, weakness
Hong et al. ¹³⁷	1	60	M	Bladder	Clear cell urothelial Ca	ChT, RT	Palliative care	Projectile vomiting
Onitilo et al. ¹³⁸	2	57	M	Prostate	Aca	LHRH agonist	ChT	Weakness, nausea, vomiting, hematemesis
		89	M	Prostate	Aca	LHRH agonist	ChT	Weakness, nausea, vomiting, hematemesis
Tiwari et al. ¹³⁹	1	58	F	Kidney	Clear cell RCC	N/A	Roux-en-Y subtotal gastrectomy	Melena, hematemesis, fatigue
Yodonawa et al. ¹⁴⁰	1	73	M	Kidney	Leiomyosarcoma	Nephrectomy	Distal gastrectomy	Melena, weakness
Chibbar et al. ¹⁴¹	1	69	F	Kidney	Clear cell RCC	Nephrectomy	Endoscopic mucosal resection	Fatigue, lightheadedness, anemia
Sakurai et al. ¹⁴²	1	61	M	Kidney	RCC	Nephrectomy	Partial gastrectomy, ChT	Melena, anemia
Patel et al. ¹⁴³	1	71	M	Prostate	Aca	Surgery, RT	N/A	Weakness, dizziness, anemia

Sharifi et al. ¹⁴⁴	1	17	F	Kidney	Primitive neuro-ectodermal	ChT	ChT	Abdominal pain, distention
Greenwald et al. ¹⁴⁵	1	62	M	Kidney	Clear cell RCC	Nephrectomy	Partial gastrectomy	Testicular pain
Costa et al. ¹⁴⁶	1	66	F	Kidney	RCC	Nephrectomy	Palliative laparoscopic wedge resection	Anemia
Soe et al. ¹⁴⁷	1	64	M	Prostate	N/A	LHRH agonist	Palliative care (patient refused chemotherapy)	Anemia, melena
Bhandari and Pant ¹⁴⁸	1	58	M	Prostate	Aca	LHRH agonist	ChT	Abdominal pain
Lowe et al. ¹⁴⁹	1	18	M	Testis	Choriocarcinoma	ChT, or-chiectomy	ChT	Melena, lethargy, dizziness
Inagaki et al. ¹⁵⁰	1	75	M	Prostate	Aca	LHRH agonist	Endoscopic mucosal resection, hormone therapy	Epigastric pain
Tavukcu et al. ¹⁵¹	1	67	M	Prostate	Mixed 55% ductal 45% acinar	Prostatectomy, RT	Androgen deprivation therapy, ChT	Ascites, vomit
Kanthan et al. ⁷¹	1	19	M	Testis	Predominantly choriocarcinoma, embryonal Ca	Orchiectomy	Partial gastrectomy	Melena, anemia

Additional Malignancy

Seventeen-three years old was the median age of the four individuals who had Merkel cell cancer. Together with GM, two patients also had additional metastases. While one patient received chemotherapy and radiotherapy, the other three patients received surgery, chemotherapy and radiation therapy. Chemotherapy and radiation therapy were administered to a patient with squamous cell carcinoma who also had other metastases besides GM. While breast metastasis from an extra mammary neoplasm is rare, accounting for only 0.5–2.0% of all mammary malignancies, primary breast cancer is a common malignancy in females and continues to be the leading cause of cancer-associated mortalities among females worldwide (1) Malignant melanoma, lymphoma, lung cancer, ovarian carcinoma, and soft tissue sarcoma are the most frequent causes of breast metastases. Gastrointestinal and genitourinary tumor types are next in line [3–6]. Breast metastasis to the stomach very rare but there are detectable cases with gastric metastasis from the breast.

Data gathering one of the inclusion criteria was: a histological diagnosis of stomach metastases from breast cancer. Studies in databases from January 1960 to December 2016, such as PubMed, MEDLINE, Embase, Google Scholar, Wanfang Database, China Science, Technology Periodical Database, and China Journal Net, were evaluated using the keywords “gastric or stomach,” “tumor or cancer or carcinoma,” “breast or mammary,” and “metastasis” to obtain data on studies detailing patients with gastric cancer with breast metastasis. Every title, abstract, and related citation was looked over and digitized. The following list of pertinent sources provides

the data [9, 10, 12, 13, 23–66]. A retrospective assessment was conducted on three patients who were diagnosed with stomach cancer and breast metastases at Renji Hospital between January 2003 and December 2017. With a median age of 49.00±1.73 years (range: 48–51 years), all patients were female. Of these patients, one had a diagnosis of both stomach cancer from breast metastases.

One patient, who had three bone tumors, was the youngest in the group at fourteen years old. One of the patients with a known treatment received chemotherapy and surgery about GM therapy, while the other patient simply received surgery. GM was identified as metachronous in every case. Soft tissue cancer was covered by three studies. Radiation, chemotherapy, snare excision, and cautery were among the several forms of GM treatment that were administered to the three patients, all of whom also had metastases. Seventy-one was the median age for the group with thyroid carcinoma. Only a single patient’s overall survival (OS) (2.5 months) was reported. Patients with GM and primary cancer patients with diffuse large B-cell lymphoma (DLBCL) (n = 2) underwent treatment. Concurrently, GM was discovered. Adrenocortical cancer of the adrenal gland is the only case of GM Along with a splenectomy and end-to-side Roux-en-Y esophagojejunal anastomosis for GM, the patient underwent adrenalectomy for primary and total gastrectomy. For both primary cancer and GM, a patient with retroperitoneal choriocarcinoma had chemotherapy. The included studies’ conclusions for gastrointestinal malignancies are summarized in Table 6 [150–171].

Table 6. Shows data illustrating the metastasis of other malignancies.

First author	No of cases	Age	Sex	Site of primary tumor	Histology type of primary	Treatment of primary	Treatment of Metastasis
Kovecsi et al. ¹⁵²	1	71	M	Adrenal gland	Adrenocortical carcinoma	Right adrenalectomy	Total gastrectomy, splenectomy, with end-to-side Roux-en-Y eso-jejunal anastomosis
Koti et al. ¹⁵³	1	14	F	Bone	Ewing sarcoma	ChT, local excision	ChT, total gastrectomy, RT
Dodis et al. ¹⁵⁴	1	72	F	Bone	Ewing sarcoma	Total knee replacements, RT, ChT	N/A
Urakawa et al. ¹⁵⁵	1	73	M	Bone	Osteosarcoma	ChT, surgery	Partial gastrectomy
Shibuya et al. ¹⁵⁶	1	27	M	Extragonadal retroperitoneal	Choriocarcinoma	ChT	ChT
Tarangelo et al. ¹⁵⁷	1	65	M	Head, neck	SCC	ChT, RT, robotic excision	N/A
Kamihara et al. ¹⁵⁸	1	70	M	Lymph nodes	DLBC	R-CHOP ChT	R-CHOP ChT
Zepeda-Gomez et al. ¹⁵⁹	1	39	F	Lymph nodes	DLBC	ChT, omeprazole	ChT
Teh et al. ¹⁶⁰	1	37	F	Oropharynx	SCC	Surgery, adjuvant RT	Palliative RT
Elkafrawy et al. ¹⁶¹	1	67	M	Skin	MCC	Surgery, consolidative	Atezolizumab, RT
Ha et al. ¹⁶²	1	82	M	Skin	MCC	Surgery, RT	No
Idowu et al. ¹⁶³	1	79	F	Skin	MCC	Surgery, ChT, RT	N/A
Parikh et al. ¹⁶⁴	1	60	M	Skin	MCC	ChT, RT	ChT
Subramanian et al. ¹⁶⁵	1	62	M	Soft tissue	Leiomyosarcoma	Surgery, RT	RT, ChT
Dent et al. ¹⁶⁶	1	60	M	Soft tissue	Sarcoma	Surgery	Remove with snare and cautery
Samuel et al. ¹⁶⁷	1	56	M	Soft tissue	Synovial sarcoma	Surgery, RT	Doxorubicin
Thorburn et al. ¹⁶⁸	1	56	M	Supraglottic larynx, hypopharynx	Advanced SCC	Surgery, tracheostomy, radical RT	N/A
Fuladi et al. ¹⁶⁹	1	71	F	Thyroid	Anaplastic carcinoma	Total thyroidectomy, left modified radical neck dissection, RT	N/A
Ayaz et al. ¹⁷⁰	1	72	M	Thyroid	Anaplastic carcinoma	N/A	N/A
Karrasch et al. ¹⁷¹	1	53	F	Thyroid	Medullary thyroid cancer	Complete thyroidectomy ChT	N/A

5. Discussion

Based on clinical and autopsy findings, gastric metastases are rare and provide insight into the advanced stage of malignant disease. Their reported incidence ranges from 0.2-0.7%. Moreover, metastases to the stomach often signify a brief survival period. Because of clinical issues with their diagnosis and management, these metastases are infrequently seen [2]. Over time, as cancer patients' prognoses improve, stomach metastatic tumors are becoming increasingly common [1]. Gastric metastases can cause several symptoms, including dyspepsia, diarrhea, nausea, vomiting, and abdominal discomfort. The most recommended course of treatment for stomach metastases is tumor excision through surgery. Chemotherapy is also the most commonly used alternative.

It is necessary to note a few possible shortcomings of this systematic review. The variability was unavoidable since 172 case reports from various journals were selected for inclusion in the systematic review. Certain articles omitted crucial details, such as comprehensive follow-up or clinical data. Furthermore, it was not possible to evaluate the papers' quality or bias because every one of the included publications was a case report.

Urogenital Malignancy

GM is rare when it comes to urogenital metastases, with documented incidences ranging from 0.2% to 0.7%. [123] .Anemia, malaise, and gastrointestinal bleeding (melena and hematemesis) are the most frequent clinical manifestations. On the other hand, two patients did not exhibit any gastroin-

testinal problems [131,140]. Esophagogastroduodenoscopy is frequently required for localized therapy and diagnosis. [131]. Gastric metastases are thought to be a significant sign of advanced illness [149]. Depending on the metastatic stage, many treatment options were available, such as chemotherapy, endoscopic resection and partial or total gastrectomy, and palliative care. Even though patients who had surgery appeared to have longer overall survival rates, this could primarily be attributed to the fact that these individuals had early-stage illnesses that could benefit from surgery. Consequently, the patient's overall health and the disease's stage should be taken into consideration while choosing a course of treatment.

Gina. Malignancy

Breast cancer is the leading cause of gastric metastases. Metastases in the uterus and ovaries are both noticeably less common [37]. When it comes to the digestive tract, invasive lobular carcinoma has the highest affinity, with an incidence of 4.5% compared to 0.2% for ductal cancer [26]. GIT metastases from breast cancer are uncommon; the median duration between initial tumor diagnosis and metastasis can reach seven years [21].

Twenty-two years have passed since the first diagnosis (17 of 24). This is the longest disease-free interval [10]. Certain metastatic tumors may present similarly to initial gastric cancer [37]. The most precise diagnosis to distinguish between primary gastric cancer and gastric metastases from breast cancer will be made possible by a comprehensive immunohistochemistry analysis [26].

The majority of gastric metastatic breast tumors are negative for the human epidermal growth factor receptor (HER2), positive for the estrogen receptor (ER), and positive or negative for the progesterone receptor (PR). Nonetheless, 20–28% of patients with primary gastric cancer have positive expressions of ER and PR [19]. A diagnosis of metastatic breast cancer cannot be established only based on these two tests since, in many situations, the disease is negative for both ER and PR [49]. Although they can be employed as markers, ER and PR are not always appropriate diagnostic markers to determine the origin of a tumor [11]. The literature regularly addresses the management of gastrointestinal metastases resulting from breast cancer. First, there is systemic therapy [37]. About 46% of patients respond well to systemic therapy. Palliative care may involve surgical intervention [33]. When there is bleeding or obstruction, surgery may be considered [36]. It is crucial to take into account the likelihood that breast cancer may metastasize to the gastrointestinal tract since this can be the initial manifestation of the disease [26,46].

Cancer of the Gastrointestinal Tract

Gastrointestinal system malignancies make up a small percentage of cancers that spread to the stomach. Anemia, bleeding, and pain were among the non-specific symptoms associated with gastric metastases. Most primary malignancies are found in the liver, colon, and pancreas. In addition to stomach metastases, nine of the individuals also had ad-

ditional metastases. Pancreatic malignancies rarely respond well to treatment because they are typically discovered at an advanced stage, making surgical intervention unlikely. Within a year, three out of five patients passed away [2, 6, 8]. Pancreatic head malignancies had a worse prognosis among these instances compared to body and tail cancers.

Pulmonary Cancer

Lung cancer is the most deadly kind of cancer. However, compared to the brain, liver, adrenal glands, and bones, the stomach is not a common location for the metastases of original lung malignancies. 74% however, it has been discovered that the expected longevity following a metastasis diagnosis is not very high. Out of 16 instances that ended in death, the median survival time was four months (average 6.8 months). However, research indicates that the gold standard for diagnosis is endoscopy. Furthermore, it is thought that pathology and immunohistochemistry play a significant role in distinguishing stomach metastases from original tumors [80]. While non-invasive chemotherapy treatments were the most popular option for treating gastric metastases of pulmonary origin, patients who underwent surgery—most notably partial gastrectomy but also esophagogastrotomy and laparotomy—tended to have comparatively longer survival times [90,95,77]. This result is not conclusive, though, as there are situations in which patients may not need surgery if their illness is really serious, and there are few examples where surgical treatments have been used. Therefore, more research is required to determine whether procedures can extend a patient's predicted lifespan.

Adverse Melanoma

Melanoma is responsible for around 75% of skin cancer-related deaths, but it makes up only 5% of cutaneous malignancies [103,107]. The most frequent gastrointestinal (GI) tract metastatic tumor is malignant melanoma [110, 120, 103]. An initial cutaneous melanoma typically takes 52 months to migrate to the gastrointestinal system [110,107]. Merely 1-4 percent of individuals suffering from malignant melanoma pass away before the diagnosis of gastrointestinal metastases. Conversely, autopsies revealed that over 60% of melanoma patients had GI tract metastases [110, 111, 114, 121]. The rectum and small and large bowels are the most often affected areas; stomach metastasis is an uncommon occurrence [110,111,117,119,121], because its symptoms—which include weight loss, hematemesis, vomiting, nausea, and epigastria discomfort—are non-specific [103,107,110,111,114,117,121]. Four to six months is the typical survival time [107, 121, 103]. Pigmentation-induced melanoma metastases can be successfully identified by endoscopy and subsequently verified by histology and immunohistochemistry [114,121]. Immunotherapy, chemotherapy, targeted therapy, and surgical excision are among the available treatment options. Surgical excision can be a palliative procedure that extends survival for a patient who is exhibiting symptoms [121,103].

Melena, vomiting, anemia, exhaustion, loss of appetite, and stomach pain rank most among the symptoms in terms of frequency. If GM is suspected, gastrointestinal endoscopy

is crucial to the diagnosis process [162]. In two cases, tumor seeding was noted upon endoscopic gastrostomy tube replacement. [161,169]. Chemotherapy is the preferred treatment for DLBCL, skin cancer, and sarcoma, even though surgery is often used to treat solid organ cancer metastases. There were only four cases where overall survival was given; therefore, it is impossible to say which treatment approach is better. Stomach metastases are not commonly reported. Thus, it appears that clinicians have difficulty making decisions about prognosis and treatment planning based on scientific facts.

6. Conclusions

It is uncommon for gastric metastases to manifest, and the exact mechanisms underlying stomach metastatic illness remain unknown. Gastric metastatic disease typically indicates the late stage of a malignant disease. Chemotherapy is the primary treatment for stomach metastases and is the driving force behind most cases. The original tumor site dictates the prognosis. The endoscopic appearance is varied, and the clinical presentation is rather nonspecific. As a result, stomach metastases require careful workup and consideration as a differential diagnosis for gastric lesions.

Resection surgery was the most common form of treatment among the 172 case reports that were analyzed; it was occasionally paired with immunotherapy and chemotherapy. There is, however, a dearth of information in the literature about treating patients with secondary stomach cancer. Consequently, further metacentric research is required to determine the optimum course of treatment for patients with stomach metastases.

Acknowledgment Is Not Applicable

Declaration and Ethical Clearance

Ethical clearance was obtained from Zagagic University, Faculty of Medicine and Institutional for data collection .the study performed in accordance and regulations of Declaration of Helsinki.

Consent for publication is not applicable

Availability of Data and Materials: a database is available to the corresponding author. The database is available upon review and request. All authors have shared the database.

Competing Interests

The authors declare they have no competing interests or financial Disclosures.

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