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RESEARCH ARTICLE

DIAGNOSTICS AND THERAPEUTICS IN KRUKENBERG TUMORS: LESSONS FROM A GYNECOLOGY DEPARTMENT

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Abstract

Background: Krukenberg tumors, metastatic ovarian neoplasms arising predominantly from the gastrointestinal tract, pose intricate challenges in diagnosis and treatment. This abstract amalgamates insights from a case series conducted at the Gynecology and Obstetrics Department of Mohammed VI University Hospital, Oujda, spanning from July 2020 to May 2022, and a comprehensive literature review. The aim is to provide a nuanced understanding of the diagnostic and therapeutic complexities inherent in these enigmatic tumors.

Diagnostic Challenges: The presented cases underscore the complexity of diagnosing Krukenberg tumors, emphasizing the need for a swift and accurate approach. Madame H.Y.'s case illustrates the rapid onset and aggressive progression, necessitating advanced imaging modalities guided by pelvic ultrasound and confirmed by a thoraco-abdomino-pelvic CT scan. Elevated CA-125 levels added diagnostic support, aligning with established literature. Histological confirmation through exploratory laparoscopy and biopsies echoes existing practices, emphasizing the crucial role of tissue sampling for precision. Madame E.B.'s case introduces a layer of complexity with a gastric origin, elucidating the challenges in discerning primary sites. A comprehensive diagnostic approach, involving laparoscopy, peritoneal biopsies, and upper endoscopy, was imperative in unraveling the disease's etiology.

Therapeutic Considerations: The aggressive nature of Krukenberg tumors, exemplified in the cases of Madame H.Y. and Madame E.B., prompts critical reflections on current therapeutic approaches. Palliative chemotherapy, a mainstay for advanced ovarian cancers, offers temporary relief, necessitating exploration of more effective systemic treatments. Madame A.H.'s case, diagnosed at an advanced stage, underwent postoperative palliative chemotherapy, aligning with literature emphasizing the palliative nature of advanced Krukenberg tumor treatment. Madame M.R.'s case introduces optimism with surgery followed by adjuvant chemotherapy, hinting at potential benefits of early intervention. This aligns with studies suggesting that earlier detection may lead to more successful treatment strategies. Cautious optimism is warranted, requiring further research validation.

Conclusion: The presented case series and literature review offer a comprehensive perspective on the diagnostic challenges and therapeutic

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nuances of Krukenberg tumors. The multifaceted nature of these tumors demands a nuanced diagnostic approach, while their aggressive behavior underscores the urgency for more effective therapeutic strategies. Madame M.R.'s case sparks optimism for early intervention, necessitating continued collaboration between clinicians and researchers to refine diagnostic accuracy and enhance therapeutic outcomes for patients grappling with this challenging malignancy.

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Introduction:-

Krukenberg tumors, originating mainly from the gastrointestinal tract, present varied clinical features, making their diagnosis and management intricate. This series contributes to the understanding of these challenges, providing insights into the diagnostic journey and therapeutic strategies for such cases.

Patients and Methods:-

This retrospective descriptive analysis was conducted at the Gynecology and Obstetrics Department of Mohammed VI University Hospital in Oujda over a two-year period from July 2020 to May 2022. The study focused on patients who met the WHO histological criteria for Krukenberg tumors, aiming to provide comprehensive insights into the diverse clinical presentations, diagnostic challenges, and therapeutic considerations associated with this metastatic ovarian neoplasm.

Data Collection Methods:

Patient information was meticulously extracted from medical records, stored at the hospital archives, and analyzed using a comprehensive form covering epidemiological, clinical, paraclinical, therapeutic, and follow-up data.

Case 1: H.Y. (55 years)

Madame H.Y., a 55-year-old homemaker and mother of five, presented with a rapid-onset abdominal distension, hindering breathing. The evolution was rapid, accompanied by diffuse and persistent abdominal-pelvic pain. She had a history of five vaginal deliveries, no notable medical background, and was menopausal.

Upon admission to the Gynecology and Obstetrics Department, she exhibited a performance status classified as OMS 2 and was overweight with a BMI of 31. Physical examination revealed apparent collateral venous circulation, a distended abdomen with diffuse dullness suggestive of significant ascites, hindering the palpation of deep abdominal structures. Gynecological examination identified a lateral-uterine mass on the left side.

Radiological investigations, guided by pelvic ultrasound and later confirmed by a thoraco-abdomino-pelvic CT scan, revealed a suspicious left ovarian swelling with irregular contours, peritoneal carcinomatosis, and abundant ascites. Tumor markers, specifically CA-125, were markedly elevated at 266 UI/ml.

Exploratory laparoscopy was performed, leading to the biopsy of the suspicious left ovary, the contralateral ovary, peritoneum, and multiple omental biopsies. Pathological examination confirmed a Krukenberg tumor, likely of digestive origin. Subsequent esophagogastroduodenoscopy (FOGD) unveiled esophagitis, gastric congestion, ulcers, and duodenal lymphangiectasia.

Despite prompt diagnosis and attempted intervention, Madame H.Y. succumbed to the disease one month after diagnosis, before the initiation of palliative chemotherapy.

Case 2: E.B. (53 years)

Madame E.B., a 53-year-old woman with a history of six vaginal deliveries and menopause, sought medical attention due to pelvic pain, postmenopausal metrorrhagia, and atypical epigastralgia with intermittent postprandial vomiting.

Upon examination, her performance status was OMS 3, and she was overweight. Clinical evaluation revealed abdominal distension with diffuse tenderness, indicating significant ascites. Gynecological examination uncovered bilateral lateral-uterine masses.

Pelvic ultrasound and subsequent thoraco-abdomino-pelvic CT scan exhibited bilateral ovarian masses, peritoneal carcinomatosis, and ascites. Elevated tumor markers CA-125 (173 UI/ml) and CA 19-9 (177 UI/ml) further raised suspicions.

Laparoscopy revealed extensive peritoneal carcinomatosis, and biopsies confirmed the diagnosis of a Krukenberg tumor with gastric origin. Upper endoscopy validated the presence of gastric adenocarcinoma.

Despite palliative chemotherapy, Madame E.B. succumbed to the disease six months after the initial diagnosis.

Case 3: A.H. (34 years)
Madame A.H., a 34-year-old woman with a uterus scarred from two previous deliveries, reported pelvic pain escalating over several weeks. Despite multiple outpatient visits and symptomatic treatment, her pain intensified, accompanied by moderate menometrorrhagia, all within a context of sustained general well-being.

On examination, her performance status was OMS 3, and she was overweight. Physical examination unveiled a Pfannenstiel scar, abdominal distension with diffuse tenderness, and a palpable abdominal-pelvic mass extending to the xiphoid process. Gynecological examination revealed a right lateral-uterine mass.

Pelvic ultrasound indicated a massive abdominal-pelvic tumor with an extensive effusion. A subsequent thoraco-abdomino-pelvic CT scan confirmed the tumor's origin in the right ovary and revealed peritoneal carcinomatosis.

Laparoscopy uncovered an enormous right ovarian tumor, a secondary left ovarian mass, and peritoneal carcinomatosis. Biopsies confirmed a Krukenberg tumor, originating from the digestive tract. Upper endoscopy identified an ulcerative process at the esophagogastric junction with nodular esophagitis and confirmed a gastric origin.

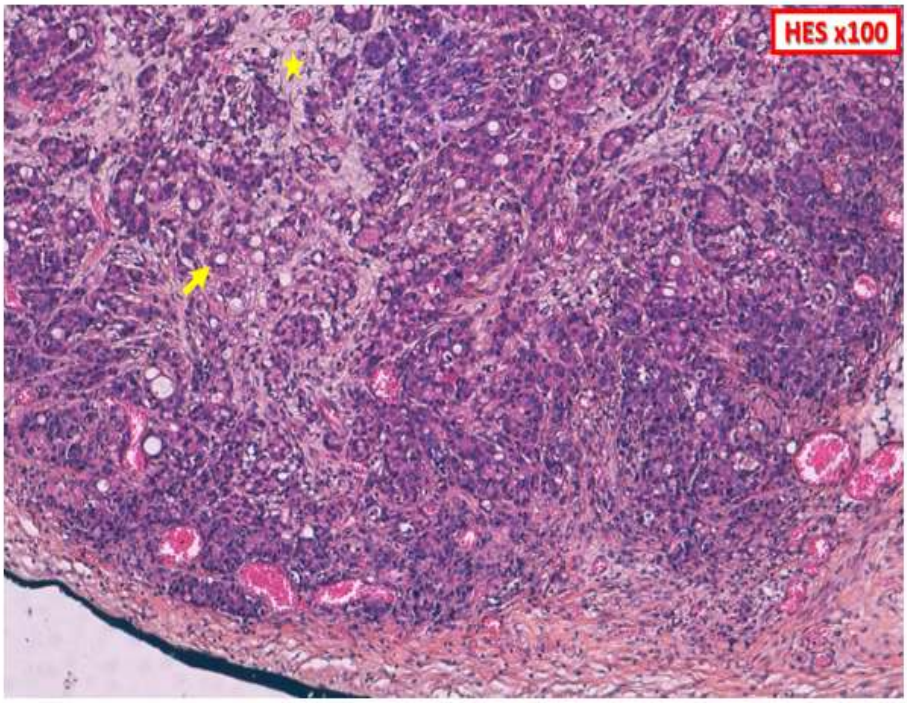
Postoperatively, Madame A.H. underwent palliative chemotherapy.

Case 4: M.R. (45 years)
Madame M.R., a 45-year-old woman, presented with chronic abdominal discomfort and irregular menstrual bleeding. Her medical history was unremarkable. On examination, she had a normal weight and an OMS performance status of 2.

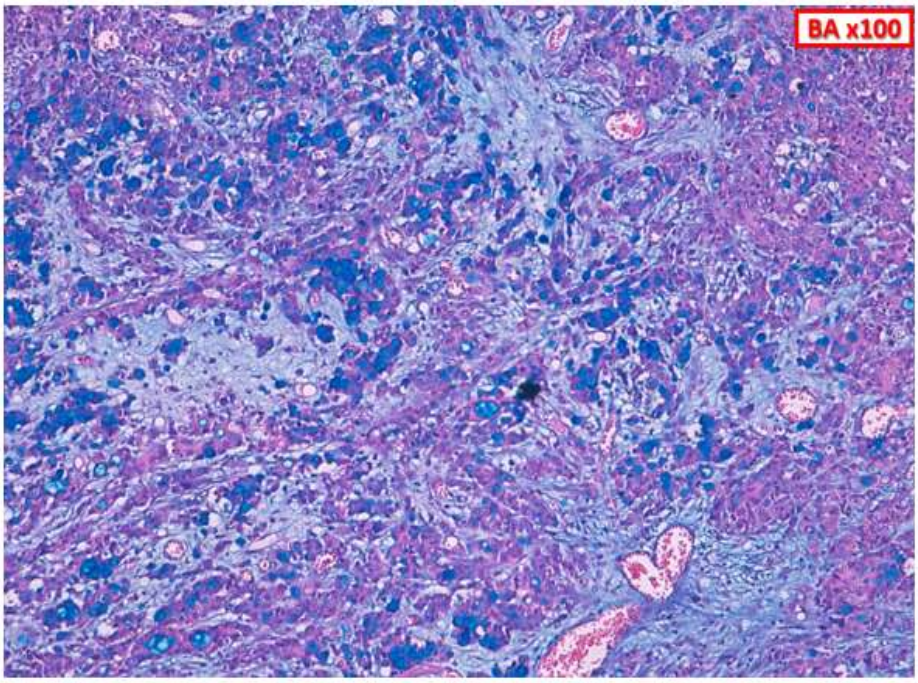
Imaging revealed a unilateral ovarian mass, and tumor marker CA-125 was moderately elevated at 68 UI/ml. Laparoscopy was performed, exposing a well-defined ovarian mass with no evidence of peritoneal metastasis. Histopathological examination confirmed a mucinous adenocarcinoma of the ovary.

Further investigations, including fibroscopy, unveiled a synchronous adenocarcinoma with a signet-ring cell appearance.

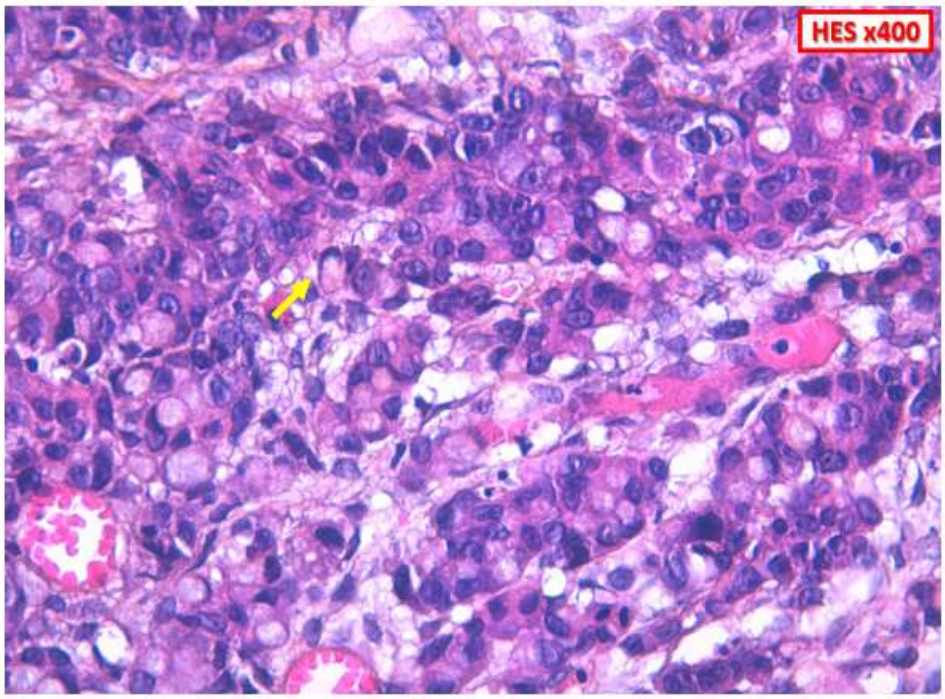
The patient underwent surgery for ovarian tumors, followed by adjuvant chemotherapy. She is currently under regular follow-up.



Histological section at low magnification showing ovarian parenchyma with a carcinomatous tumor proliferation composed of trabeculae, nests, scattered vacuolar isolated cells (yellow arrow), and some glandular rudiments. The stroma exhibits myxoid changes in certain areas (yellow star)



The special Alcian Blue (AB) staining highlights intracytoplasmic mucin in the signet ring-like cells and within the extracellular matrix



At high magnification, the tumor cells are large, characterized by nuclei with irregular, vesicular contours, prominent nucleoli, and abundant eosinophilic or vacuolar cytoplasm. The nuclei are displaced towards the periphery, creating a signet ring-like appearance (yellow arrow).

Discussion:-

Diagnostic Challenges:

The cases discussed in this series underscore the diagnostic complexities associated with Krukenberg tumors. The rapid onset and aggressive progression of the disease, as seen in Madame H.Y.'s case, necessitate a prompt and accurate diagnosis. Radiological investigations guided by pelvic ultrasound and confirmed by a thoraco-abdomino-pelvic CT scan were instrumental in raising suspicions. Elevated tumor markers, specifically CA-125, further supported the diagnosis, aligning with existing literature highlighting the utility of CA-125 as a biomarker for ovarian malignancies[1].

However, definitive diagnosis often requires histological confirmation. The pivotal role of exploratory laparoscopy and subsequent biopsies in confirming Krukenberg tumors is consistent with established literature, emphasizing the necessity of tissue sampling for accurate diagnosis[2]. The importance of considering Krukenberg tumors in the differential diagnosis of pelvic masses, even in younger patients, aligns with the findings of studies emphasizing the diverse demographic spectrum of patients affected by these tumors[3].

Madame E.B.'s case adds a layer of complexity with the tumor originating from the stomach, showcasing the challenges in pinpointing the primary origin of Krukenberg tumors. Multiple diagnostic modalities, including laparoscopy, extensive peritoneal biopsies, and upper endoscopy, were required to unravel the complex etiology of the disease. This aligns with the literature underscoring the diagnostic challenges posed by the diverse primary sites of Krukenberg tumors, emphasizing the importance of a comprehensive diagnostic approach[4].

Therapeutic Considerations:

The aggressive nature of Krukenberg tumors, evident in the cases of Madame H.Y. and Madame E.B., raises questions about the efficacy of current therapeutic approaches. Palliative chemotherapy, despite being a mainstay in the management of advanced ovarian cancers, often provides only temporary relief[5]. The challenges posed by advanced stages at diagnosis and the aggressive behavior of these tumors highlight the need for more effective systemic treatments.

Madame A.H.'s case, diagnosed at an advanced stage, underwent palliative chemotherapy postoperatively. This therapeutic decision aligns with existing literature emphasizing the palliative nature of treatment for advanced Krukenberg tumors, with the goal of enhancing the patient's quality of life[6]. The discussion of patient-centered care in advanced cases echoes the findings of studies advocating for a holistic approach, considering not only the disease's progression but also the patient's overall well-being[7].

Madame M.R.'s case introduces a more optimistic note, with surgery for ovarian tumors followed by adjuvant chemotherapy. The patient's favorable response to treatment raises intriguing possibilities regarding the impact of early diagnosis on therapeutic outcomes. This aligns with studies suggesting that earlier detection of Krukenberg tumors may lead to more successful treatment strategies[8]. However, the limited number of cases in this series warrants cautious optimism, and further research is needed to validate the potential benefits of early intervention.

Literature Review:-

The literature surrounding Krukenberg tumors emphasizes their rarity and diagnostic challenges. Studies consistently highlight the importance of considering these tumors in the differential diagnosis of pelvic masses, particularly in postmenopausal women[9]. The aggressive behavior of Krukenberg tumors is a recurring theme in the literature, with advanced stages often contributing to a poorer prognosis[10].

The diverse primary origins of Krukenberg tumors, including gastric, colorectal, and pancreatic sources, complicate the diagnostic journey[11]. The utility of tumor markers such as CA-125 is acknowledged, but the definitive diagnosis relies on histological confirmation[12]. Laparoscopy is frequently employed for biopsy and staging, aligning with the findings in the presented cases[13].

The therapeutic landscape for Krukenberg tumors remains challenging. While surgery is considered for localized disease, the role of adjuvant chemotherapy is less well-defined, particularly in advanced cases[14]. The limitations of current therapeutic approaches underscore the need for novel systemic treatments targeting the aggressive nature of these tumors[15].

Conclusion:-

In conclusion, the presented case series and literature review provide a comprehensive understanding of the diagnostic challenges and therapeutic considerations associated with Krukenberg tumors. The multifaceted nature of these tumors, originating from diverse primary sites, requires a nuanced diagnostic approach. The aggressive behavior of Krukenberg tumors emphasizes the urgency in developing more effective therapeutic strategies, particularly in advanced cases. Madame M.R.'s case hints at the potential benefits of early intervention, opening avenues for further research in this direction. As we navigate the complex landscape of Krukenberg tumors, continued collaboration between clinicians and researchers is essential to improve diagnostic accuracy and enhance therapeutic outcomes for patients facing this challenging malignancy.

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