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Ovarian malignancy in a patient with Herlyn–Werner–Wunderlich syndrome: A rare clinical presentation

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Abstract:

Herlyn–Werner–Wunderlich Syndrome (HWWS) is a rare congenital Mullerian duct anomaly, characterized by the presence of an obstructed hemivagina with uterus didelphys and an ipsilateral renal anomaly (OHVIRA). Ovarian serous adenocarcinoma is a type of epithelial ovarian cancer and accounts for about 90% of all ovarian cancers. The incidence of Müllerian duct anomalies associated with ovarian cancer is unknown. Due to its rarity of these conditions, diagnosis and management are challenging. In this paper, we present a case of a 53-year-old, nulligravid woman who presented with an acute abdomen. A transrectal and transabdominal sonography showed an ovarian mass with malignant features. Immediate surgical intervention was performed, and removal of the ovarian mass was done. Intraoperatively, findings of obstructed hemivagina, uterine didelphys, and the absence of one kidney were noted, suggestive of HWWS. Biopsy of the mass revealed borderline serous cystadenocarcinoma of the right ovary.

Keywords:

Herlyn–Werner–Wunderlich syndrome, OHVIRA, ovarian cancer

Introduction

Ovarian cancers comprise epithelial and nonepithelial ovarian malignancies. Epithelial ovarian cancer is the most prevalent type, accounting for more than 95%, while approximately 5% are nonepithelial ovarian cancers.[1,2] Ovarian serous adenocarcinoma accounts for about 90% of all ovarian cancers.[3] Although ovarian cancer accounts for only 3% of all cancers in women, it has one of the highest death-to-incidence ratios, which has been primarily attributed to the unavailability of effective screening tools, the absence of early phase symptomatology in many patients, and, accordingly, its typical presentation at advanced stages when prognosis is poor.[4]

Herlyn–Werner–Wunderlich Syndrome (HWWS) is a rare congenital Mullerian duct anomaly diagnosed by the presence of obstructed hemivagina and ipsilateral renal anomaly (OHVIRA). The incidence of Mullerian Duct anomalies – including Herlyn-Werner-Wunderlich Syndrome has been estimated to range approximately at 0.1% to 3% of the general female population, and the etiology is poorly understood.[5] The incidence of Mullerian duct anomalies associated with ovarian malignancy is unknown, with few published case reports. Due to their rarity, they are often overlooked and misdiagnosed, and fail to get timely treatment.

This case explores the presentation and management of a patient who consulted in the emergency room with an ovarian mass in complication and was intraoperatively assessed to have this rare uterine anomaly.

Case Report

A 53-year-old nulligravid presented to the emergency room with complaints of

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abdominal pain. The patient reported a gradual increase in abdominal distention, heaviness, unintentional weight loss, and decreased appetite over the past 3 months. No changes in bladder or bowel habits were noted. Two weeks prior to admission, she experienced vaginal bleeding, soaking one pad per day, accompanied by abdominal distension and bloatedness. Additionally, the patient reported persistent abdominal pain and symptoms of incomplete bladder emptying and dysuria. One day prior to admission, the patient experienced generalized abdominal pain, with a pain score of 8/10, without associated fever or vomiting. This prompted consultation at the emergency room.

Pertinent to her past medical history includes a history of hospitalization for 1 month at 11 years old due to an alleged uterine mass for which medical management was done. She was diagnosed hypertensive for 4 years, maintained on Losartan. Family history is notable for diabetes mellitus and hypertension on her maternal side, with no known malignancies or congenital anomalies. The patient is a college graduate, a nonsmoker, and nonalcoholic beverage drinker. She had her menarche at age 15 and reports regular menstrual cycles lasting 3–4 days, requiring 7–8 moderately soaked pads per day, without dysmenorrhea. She is a nulligravid with no history of sexual contact, gynecological infections, or hormonal therapy. She has been menopausal for the past 4 years.

Upon admission, the patient was hypertensive (blood pressure – 140/90 mmHg), tachycardic (118 bpm), tachypneic (24 rpm), and afebrile. She is obese with a body mass index of 29.1 kg/m^2. She has clear breath sounds, no palpable supraclavicular lymph nodes, and no breast masses. Her abdomen was distended with an abdominal girth of 107 cm. On palpation, the abdomen was soft but was tender on deep palpation in all quadrants. Digital rectal examination was done with note of good sphincteric tone, an intact rectovaginal septum, posterior pole of the mass cannot be fully assessed due to tenderness. A transrectal and transabdominal sonography was performed which revealed an atrophic anteverted uterus with a 0.4 cm thin endometrium. A predominantly solid, pelvoabdominal mass was identified as an ovarian new growth classified as malignant by IOTA simple rules, described as solid, measuring 20 cm × 19 cm × 14 cm [Figure 1a], color score of 1 [Figure 1b].

The patient eventually underwent emergency exploratory laparotomy, peritoneal fluid cytology, total abdominal hysterectomy with bilateral salpingo-oophorectomy, bilateral lymph node dissection with para-aortic lymph node sampling, infracolic omentectomy, random peritoneal biopsy, enterolysis, and appendectomy. Upon exploration, there was no ascites. The right ovary was converted to a predominantly cystic mass [Figure 2a], measuring 25 cm × 20 cm × 20 cm, with a note of preoperative rupture at the left inferolateral aspect of the mass, extruding chocolate-like fluid. The said mass was adherent to the omentum anteriorly and bowels posteriorly. The cut section of the mass revealed chocolate-like fluid, with multiple areas of papillary excrescences [Figure 2b], suspicious of malignancy. A referral to gynecologic oncology was made for surgical staging, while a referral to general surgery was made for enterolysis. Gross examination of the uterus showed two distinct uterine horns, each with its own separate cervix [Figure 3a]. The right uterine horn measured 6 cm × 6 cm × 2 cm (left cervix 3 cm × 3 cm × 1 cm) while the left uterine horn measured 4 cm × 6 cm × 1.5 cm (left cervix 2 cm × 2 cm × 1 cm). The right hemivagina ended in a blind pouch, while the left hemivagina communicated with the introitus [Figure 3b]. The right fallopian tube and the left adnexa attached to the corresponding uterine horns were grossly normal. Upon palpation of abdominal organs, the left kidney appeared enlarged, while the right kidney was notably absent. The liver, spleen, bladder, and appendix were smooth. The abdominal wall, peritoneum, and pelvic gutters were smooth with erythematous areas. A total blood loss of 1 L was incurred during the procedure. However, the patient tolerated the procedure well and was discharged in improved condition on the 4th hospital day.

Subsequent histopathologic analysis confirmed a diagnosis of borderline serous cystadenocarcinoma of the right ovary with omental involvement [Figure 4]. All additional harvested lymph nodes and biopsy specimens were negative for metastatic disease. The case was classified as FIGO Stage IIIA2. The patient was advised to undergo adjuvant chemotherapy and was placed under close surveillance and follow-up.

Case Discussion

Incidence

Mullerian duct anomalies are rare with varying reported worldwide prevalence ranging between 1% and 5.5%.[6] Up to date, the incidence of Müllerian duct anomalies associated with ovarian malignancy is unknown with few published case reports. Up to our best knowledge, this is the second case of ovarian cystadenocarcinoma with HWWS reported. First is the case reported by Medhavi *et al*., a rare case scenario of didelphic uterus with ovarian serous cystadenocarcinoma.[7]

Pathophysiology of Herlyn–Werner–Wunderlich syndrome

Müllerian anomalies encompass congenital alterations affecting the female reproductive tract and are frequently

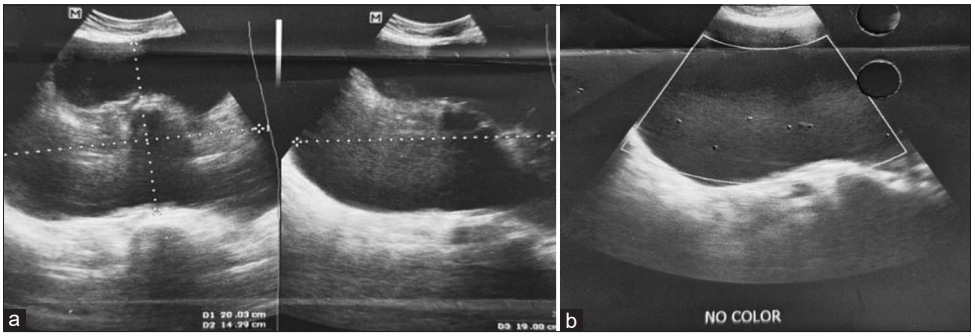

Figure 1: Ultrasound findings of the ovarian mass: (a) The transverse and anteroposterior views of the pelvoabdominal mass described as predominantly solid with smooth external surface; (b) Color flow mapping was absent (Color Score of 1)

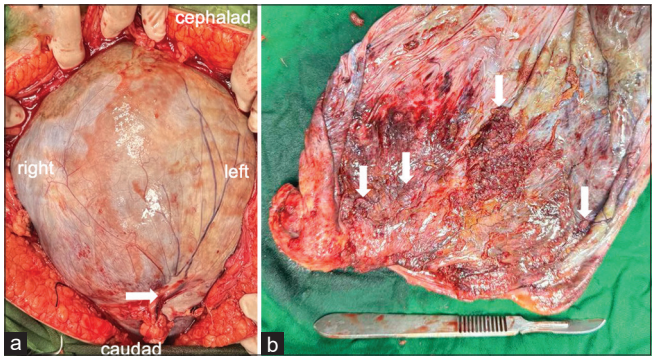

Figure 2: Intraoperative photos showing the ovarian mass: (a) The right ovary converted to a predominantly cystic mass measuring 25 cm × 20 × 20 cm, with note of a rupture at the left lateral aspect of the mass (arrow). (b) Cut-section of the mass showed multiple areas with papillary excrescences (arrows)

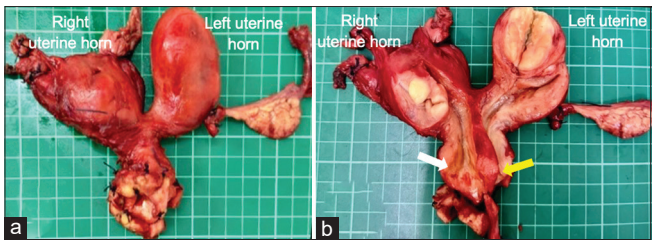

Figure 3: The uterus showed two distinct uterine horns, each with its own separate cervix (a) and its cut section (b). The right hemivagina ended in a blind pouch (white arrow), while the left hemivagina communicated with the introitus (yellow arrow)

associated with anomalies in the renal, ureteral, and bladder systems due to their shared embryological origin.[7] It is a rare condition first reported in 1925 and subsequently described in detail by Herlyn, Werner, and Wunderlich, after whom it was initially named HWWS. It is diagnosed by the presence of obstructed hemivagina with uterus didelphys and an ipsilateral renal anomaly (also known as OHVIRA). To understand this syndrome, it is important to review the theory on embryogenesis. The mesonephric ducts on each side out-pouch to form the mesonephric diverticulum by the 5th week of gestation.[8] Soon after, the diverticulum will become the ureteric bud that triggers the kidney formation by the mesonephric blastema. The paramesonephric ducts will begin to develop by the 7th week of gestation, lateral to the mesonephric ducts then migrate medially to it. It has been stated that the development of the paramesonephric ducts, as well as their positioning and fusion, depends largely on the factors released by the mesonephric ducts.[9] Subsequent fusion of the mesonephric ducts occurs, and resorption of the midline septum results in normal uterine formation. The Acines hypothesis postulates that the vagina is derived from the Wolffian ducts instead of the classical theory of the upper two-thirds derived from the Mullerian ducts and lower third from the sinovaginal bulb; however, the vaginal lining epithelium is derived from the Mullerian ducts.[9] Hence, any developmental anomaly during this process will affect the female reproductive and renal systems.

Clinical presentation and diagnosis

Signs and symptoms generally present after menarche with cyclic or noncyclic pelvic pain, vaginal discharge, urinary retention, pelvic infection, and poor pregnancy outcomes. Some are asymptomatic, and diagnosis is often delayed until acute complications develop. Notable in this case is that, aside from being hospitalized when she was 11 years old due to an alleged uterine mass, the patient had no significant clinical findings until she had her menopause for 4 years and developed an acute abdomen. The diagnosis of this syndrome is achieved through detailed medical history, thorough physical examination, and imaging studies such as sonography and magnetic resonance imaging (MRI). Sonography is the most commonly used initial imaging modality due to its accessibility and low-cost option. However, MRI is still considered the gold standard for definitive diagnosis. In our case, the patient had a transrectal ultrasound, but due to the size of the ovarian new growth that is obstructing the view of the uterus, the diagnosis of uterine didelphys was missed.

Investigating the link between ovarian cancer and Herlyn–Werner–Wunderlich syndrome

The association between the occurrence of ovarian cancer in patients with HWWS is rare, but some cases have been reported. One theory points to the abnormal

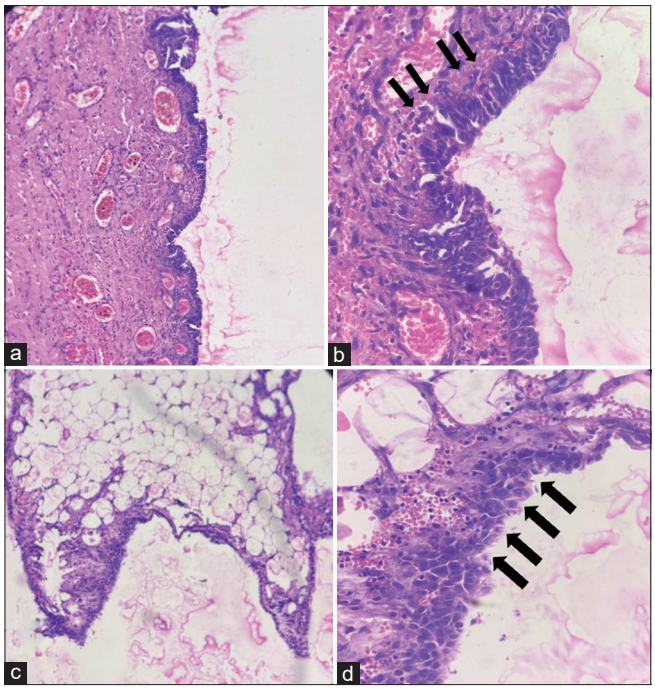

Figure 4: Histopathologic examination of the biopsy specimens revealed a borderline serous cystadenocarcinoma involving the right ovary and associated omental seeding. (a) Low power view (H and E, ×40) showing complex papillary structures with hierarchical branching lined by stratified atypical epithelium, consistent with a borderline serous tumor. (b) High power view (H and E, ×400) highlighting areas of epithelial proliferation with nuclear stratification and tufting (arrows), supportive of borderline serous neoplasm. (c) Low power view (H and E, ×100) of omental tissue showing surface epithelial implants involving the adipose tissue, suggestive of secondary tumor spread. (d) High power view (H and E, ×400) demonstrating clusters of atypical epithelial cells infiltrating the omental stroma (arrows), consistent with omental seeding

development of reproductive organs in HWWS, which could increase the risk of tumor formation, though the exact mechanism remains unclear. In women with HWWS, the congenital uterine and vaginal anomalies might affect ovarian development, potentially raising the risk of ovarian malignancies. These tumors may be more likely to develop if there are structural anomalies, impaired ovarian function, or hormonal imbalances. In some cases, a woman with HWWS may present with nonspecific symptoms, which could initially be attributed to the congenital condition but later reveal the presence of ovarian malignancy. In such cases, the malignancy could be detected alongside other reproductive anomalies, making early detection more difficult.

Another theory that could potentially explain the association between the two is the presence of an obstructed hemivagina in HWWS. This is associated with several known complications, such as pelvic pain, endometriosis, hematocolpos (accumulation of menstrual blood in the obstructed hemivagina), and an increased risk of infection. The obstruction leads to retrograde menstruation, causing pelvic congestion, endometriosis, or chronic inflammation. Chronic inflammation and hormonal disruptions are sometimes implicated in the development of certain types of ovarian cancers, though this association is more commonly discussed in the context of endometriosis rather than HWWS specifically. The obstruction could result in a build-up of endometrial tissue or menstrual debris, altering the local pelvic environment and potentially increasing the risk of malignancy over time. However, ovarian cancer, specifically borderline serous tumor in this context, is still considered rare since the associated ovarian malignancy in endometriosis is of the endometrioid and/or clear cell histologic type.

Another possible risk factor for the development of women ovarian cancer in patients with HWWS would be infertility and nulliparity. Nulliparity was present in our index case. It has been suggested in the literature that the more ovulatory cycles a woman has, the greater her exposure to hormones like estrogen, which can promote the growth of ovarian cancer cells. Another explanation for the association between ovulatory cycles and an increased risk for ovarian cancer is due to the recurrent inflammation that occurs with each ovulation. Each cycle involves the release of an egg, which induces mild inflammation in the ovarian tissue. Chronic and repeated cycles of inflammation over time can lead to tissue damage and disrupt normal cellular processes, increasing the likelihood of mutations and the development of ovarian cancer.

Management

The management of ovarian masses depends on whether the mass is benign or malignant. Although benign masses may require observation or minor surgery, malignant ovarian masses often need comprehensive surgical staging, chemotherapy, and long-term monitoring. The approach should be individualized based on factors such as the patient's age, reproductive goals, and risk factors.

The management of HWWS is also individualized, primarily depending on the patient's fertility goals and symptoms. In the reproductive age group, management is primarily surgical, particularly for the obstructed hemivagina. Surgical management is usually required to relieve the obstructed hemivagina in order to prevent complications like hematocolpos, endometriosis, pelvic pain, and infection. Women with HWWS can conceive, but they may face difficulties such as preterm birth or recurrent pregnancy loss; hence, fertility counseling and prepregnancy planning are essential. Regular renal function tests should also be performed to monitor for any potential renal impairment. For women in the menopausal age group, such as in our index case, management is generally focused on addressing residual reproductive

tract issues, ensuring renal health, and managing symptoms related to menopause. Given the increased risk for endometrial and ovarian cancer in patients with HWWS, regular gynecological exams, ultrasound, and CA-125 are considered an essential part of routine surveillance. Early diagnosis and timely intervention can improve outcomes, especially in patients desirous to maintain fertility and preserve their reproductive function. Multidisciplinary care involving reproductive endocrinologists, infertility specialists, oncologists, and genetic counselors is key to optimal management.

Summary

We presented a case of a 53-year-old, nulligravid woman diagnosed with borderline serous cystadenocarcinoma of the right ovary with an incidental finding of HWWS. Although the direct correlation between the cause of ovarian cancer in patients with HWWS is not well-established, the syndrome's complex reproductive anomalies, combined with potential risk factors such as nulliparity, infertility, endometriosis, and pelvic inflammation, could theoretically contribute to an increased risk of ovarian malignancy. Knowledge of this syndrome and the possibility of ovarian cancer is important to note, as it can guide clinicians in determining the best management and surveillance strategies. However, further research and case studies are needed to fully understand this potential link.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Authorship contributions

Gilana A. Gonzales, MD - Investigation, data curation, writing original draft, visualization.

Aubrey Y. Señeris, RMT, MD, FPOGS, FSGOP, FPSCPC) - Conceptualization, writing - review and editing, visualization and supervision.

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Conflicts of interest

There are no conflicts of interest.

References

1. Lheureux S, Braunstein M, Oza AM. Epithelial ovarian cancer: Evolution of management in the era of precision medicine. CA Cancer J Clin 2019;69:280-304.
2. Kaplan BY, Markman MA, Eifel PJ. Ovarian cancer, peritoneal carcinoma and fallopian tube carcinoma. In: DeVita VT Jr., Hellman S, Rosenberg SA, editors. Cancer: Principles and Practice of Oncology. 7th ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2005. p. 1364.
3. Li J, Fadare O, Xiang L, Kong B, Zheng W. Ovarian serous carcinoma: Recent concepts on its origin and carcinogenesis. J Hematol Oncol 2012;5:8.
4. Aveiro AC, Miranda V, Cabral AJ, Nunes S, Paulo F, Freitas C. Herlyn-Werner-Wunderlich syndrome: A rare cause of pelvic pain in adolescent girls. BMJ Case Rep 2011;2011:bcr0420114147.
5. Behr SC, Courtier JL, Qayyum A. Imaging of Müllerian duct anomalies. Radiographics 2012;32:E233-50.
6. AlBaik TM, Ibrahim AT, AbuKaresh NA, Anini EM, Hattab LM, Albandak M. A rare case of obstructed hemivagina with uterus didelphys and ipsilateral renal anomaly syndrome. SAGE Open Med Case Rep 2024;12. doi:10.1177/2050313X241256517.
7. Jha S, Abdi S. Diverse presentations of OHVIRA syndrome: A case series. Clin Pediatr (Phila) 2021;60:6-8.
8. Acién P. Embryological observations on the female genital tract. Hum Reprod 1992;7:437-45.
9. Asha B, Manila K. An unusual presentation of uterus didelphys with obstructed hemivagina with ipsilateral renal agenesis. Fertil Steril 2008;90:849.e9-10.