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Case Report

Florid diffuse peritoneal deciduosis mimicking carcinomatosis in a primigravida patient: a case report and review of the literature

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Abstract: A case of a 27 year old G1P0 female with a dichorionic, diamniotic twin pregnancy presenting with premature rupture of membranes found to have omental caking and diffuse yellow-tan peritoneal nodules, clinically suspicious for carcinomatosis. The case work-up showed this to be an example of florid-diffuse peritoneal deciduosis mimicking carcinomatosis which has since resolved 4 months postpartum.

Keywords: Deciduosis, peritoneal, carcinomatosis, decidua, pregnancy

Introduction

Peritoneal deciduosis is a benign transient condition uncommonly encountered in the setting pregnancy; more specifically during late pregnancy of twin gestation. This condition is most commonly discovered incidentally during cesarean section with the gross finding of focal or diffuse tan to yellow nodules within the peritoneal cavity. The initial differential diagnosis was broad which was later narrowed down morphologically and immunohistochemically to benign peritoneal deciduosis, signet ring cell adenocarcinoma, deciduoid mesothelioma, epithelioid leiomyosarcoma, rhabdomyosarcoma, malignant melanoma and placental site trophoblastic tumor.

Most studies have shown that the nodules of peritoneal deciduosis are most likely to be a metaplastic process found on the serosa of the Müllerian organs however has also been documented to involve the appendix, bladder, omentum, and even have changes in the peritoneal fluid. With this entity being benign and self-resolving it is important not to confuse it with a malignancy, especially during a naturally stressful time of new parenthood.

Case report

Clinical presentation

A 27 year old G1P0 female with a dichorionic, diamniotic twin pregnancy at 31w1d presented with premature rupture of membranes. The only significant past medical history was kidney and gall bladder stones. On ultrasound, fetus A was in breech position, so it was determined to proceed with cesarean section. Upon delivery of both neonates, the uterine serosa showed areas described as “yellow appearing induration”. Further examination of the abdomen showed an indurated appendix with similar appearing yellow lesions on the uterine serosa and omental caking, clinically concerning for possible carcinomatosis. Large biopsies were taken from the uterine serosa and omentum. The ovaries and fallopian tubes showed insignificant findings by the obstetrician under close gross examination. As of 4 months postpartum, mother and infants have returned home without further complications and no abnormal findings on physical examination.

Gross and histopathology

Two pieces of tan-gray rubbery, lobulated tissue measuring 5.8x4.3x1.1 cm and 4.2x2.6x0.2 cm

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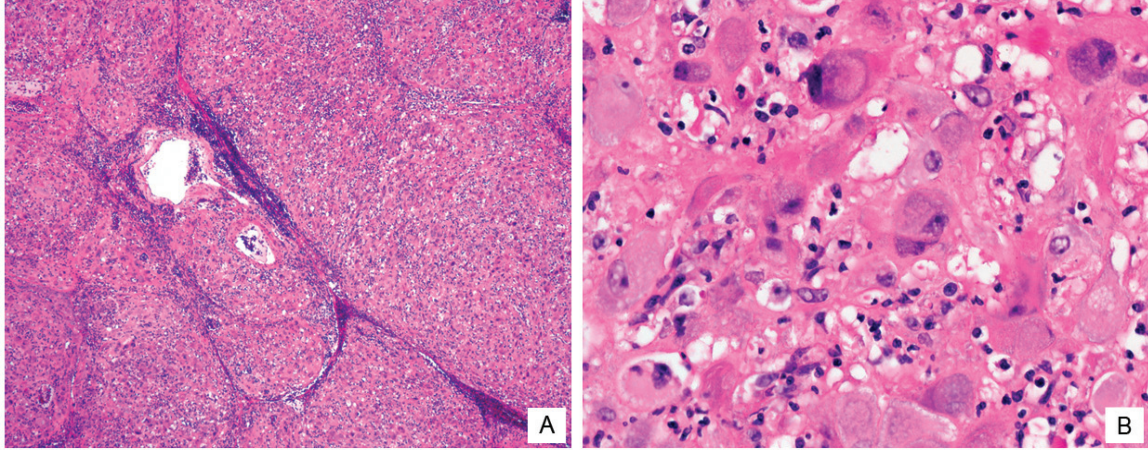


Figure 1. A: Low Power (original magnification x40) view of the lobular architecture. B: High Power (original magnification x400) view of the decidual cells with abundant eosinophilic cytoplasm. Note the degenerating cell in the upper middle field and the mixed inflammatory infiltrate.

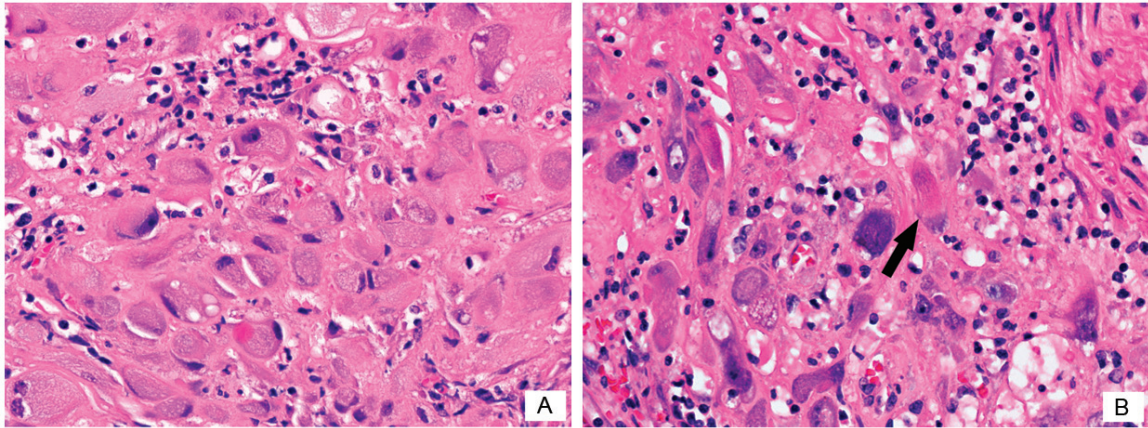


Figure 2. A: Decidual cells mimicking signet ring cells with eccentrically placed nuclei (original magnification x400). B: Decidual cells mimicking "strap cells" of rhabdomyosarcoma with cytoplasmic striations (arrow) (original magnification x400).

respectively from the omentum and uterine serosa were received. Sectioning of the tissue revealed multi-lobulated rubbery pale tan-gray tissue with dispersed yellow soft tissue involving approximated 80% of the specimen with focal recognizable omental tissue.

Microscopic examination revealed sheets of large cells with abundant eosinophilic to amphophilic cytoplasm forming lobules and nests moderately infiltrated by a mixture of acute and chronic inflammatory cells. Islands of adipocytes are surrounded by these eosinophilic lobulations and inflammation (**Figure 1A**). Cytologically, most of the cells have abundant pink finely granular eosinophilic to amphophilic cytoplasm, indistinct cell borders with varying

degrees of degeneration intensified around microscopic zones of necrosis. Viable cells were depicted as cells that had abundant pale eosinophilic cytoplasm with either centrally or eccentrically located nuclei, open to hyperchromatic chromatin and inconspicuous to prominent nucleoli (**Figure 1B**). A subset of cells had amphophilic myxoid/vacuolated cytoplasm forming a signet ring appearance (**Figure 2A**), with another subset comprised of few spindle cells with deeply eosinophilic cytoplasm mimicking rhabdomyoblastic cells (**Figure 2B**). Degenerating cells had subtly darker eosinophilic cytoplasm with hyperchromatic, angular nuclei with smudgy chromatin. Immunohistochemically, the tumor cells were focally positive

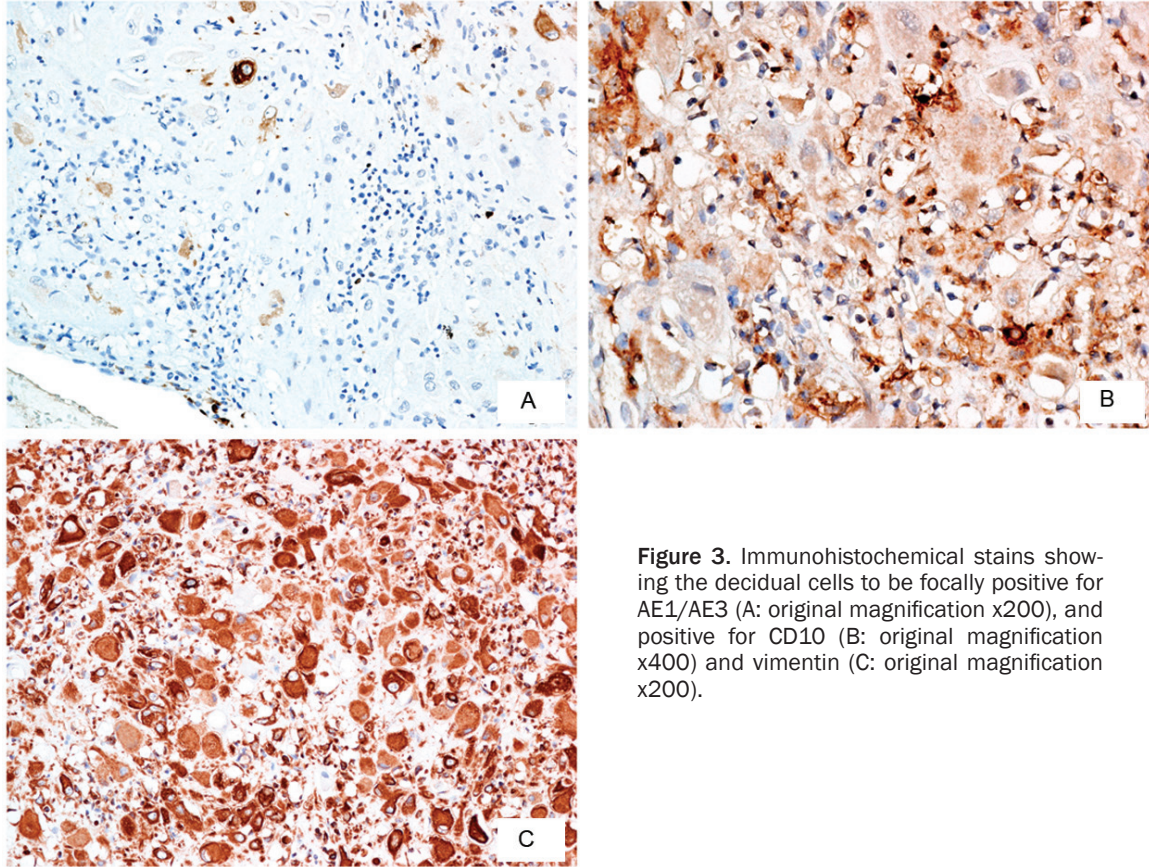


Figure 3. Immunohistochemical stains showing the decidua cells to be focally positive for AE1/AE3 (A: original magnification x200), and positive for CD10 (B: original magnification x400) and vimentin (C: original magnification x200).

for AE1/AE3 (Figure 3A), and positive for CD10 (Figure 3B), vimentin (Figure 3C), PR, polyclonal CEA and CD68 and negative for ER, Inhibin, Melan-A, S-100, PLAP, hCG, Myoglobin, Myogenin, Desmin, EMA, HMB-45, and HHF-35.

Discussion

Diffuse peritoneal deciduosis is an uncommon ectopic decidual reaction that occurs in the setting of high levels of progesterone most commonly seen in pregnant women with twin gestation. These have been documented to have most commonly occurred in other sites of Müllerian origin [1-3] as well as other sites on rarer occasions including the appendix [4] bladder [5] and omentum [6].

The main differential diagnosis for our case was not discussed in the differential diagnosis of neoplastic conditions of the most commonly used textbooks. Our main differential diagnosis initially was most concerning for peritoneal carcinomatosis macroscopically and microscopically. Initial immunohistochemical stains excluded carcinomatosis (mostly negative for

pancytokeratin and positive for vimentin), which left our top four possibilities to be malignant melanoma, deciduoid mesothelioma, epithelioid leiomyosarcoma, and placental site trophoblastic tumor (PSTT) with germ cell neoplasms and rhabdomyosarcoma as more remote possibilities. On an interesting note, the focal weak positivity of the decidual cells for AE1/AE3 may support the metaplastic mesothelial nature thought to be the underlying cause of this syndrome.

Malignant melanoma (MM) has been reported on very rare occasions to present as peritoneal "carcinomatosis" [7], which was typically negative for pancytokeratin and positive for vimentin, sometimes, vimentin can be the only positive marker for melanoma, but, our negative HMB45, Melan-A, S-100, positive CD10 and mCEA excluded this possibility.

Signet ring cell carcinomatosis is uncommon carcinoma with several possible primary sites including but not limited to gastrointestinal (appendix, stomach) or Müllerian (endocervical) origin. The cells characteristically have eccen-

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trically placed nuclei and a cytoplasm which is filled with mucin. The cells are diffusely infiltrating and can be found as single cells, nests or cords. These cells are typically positive for broad spectrum cytokeratins, which was not seen in this case.

Deciduoid mesothelioma (EM) was originally described as an entity confined to young women of reproductive age but has recently been shown as a variant of mesothelioma that can be seen in a wide range of ages, including males, with a similar dismal outcome as conventional epithelioid mesothelioma [8, 9]. The cells are large with abundant eosinophilic cytoplasm, well-defined cell borders, little pleomorphism, low mitotic activity, and predominantly cohesive. The immunohistochemical profile of the neoplastic cells are similar to conventional mesothelioma in that they are positive for cytokeratin 5/6, calretinin, D2-40, and vimentin and negative for epithelial markers such as BerEp4, MOC-31, and B72.3.

Epithelioid leiomyosarcoma is a rare tumor that is composed predominantly of epithelioid cells rather than the spindle smooth muscle cells of the conventional type and has a higher probability of metastatic spread. The cells have a large amount of eosinophilic cytoplasm and can vary in degree of nuclear pleomorphism. Even in the absence of necrosis, increased mitotic activity, nuclear pleomorphism, and vascular invasion microscopically there is still a risk for metastasis. The neoplastic cells are typically positive for smooth muscle markers such as SMA, desmin, and HHF-35.

Placental site trophoblastic tumor (PSTT), as the name implies, is a neoplasm of low malignant potential comprised of monomorphic intermediate trophoblast cells. This neoplasm is commonly discovered at a low stage occurring on an average 34 weeks after gestation. Unlike choriocarcinoma, in which the cell type is biphasic displaying cytotrophoblast and syncytiotrophoblastic cell, the cells of PSTT are uniform. Intermediate trophoblastic cells are large with abundant eosinophilic to amphophilic cytoplasm with uniform nuclei that can have nuclear membrane irregularities, hyperchromasia, and occasional multinucleation. The cells are positive for human placental lactogen (hPL) and inhibin and negative for human chorionic gonadotropin (hCG).

Although the complete immunoprofile of the above entities were not performed, the neoplastic cells were negative for inhibin and smooth muscle markers and predominantly negative for high molecular weight cytokeratins thus effectively ruling out MM, EM, EL, and PSTT.

The origin of peritoneal decidualosis has been a debated subject with the proposal of two possible theories [2]. The first is that the sub-coelomic mesenchymal cells undergo a progesterone-induced metaplasia whereas the second theory claims that the decidual cells are already distributed in the peritoneum, e.g. from preexisting endometriosis. In our case, there is no evidence of endometriosis, and our immunostaining results show partial cytokeratin positivity indicating that in our patient the former theory of possible mesothelial origin is most likely.

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