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Case Report

Infant Testicular Tumour in Maternal Ovarian Cancer

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Abstract:
Vertical transmission is a rare phenomenon that can occur during pregnancy with a mother diagnosed with cancer. We present a rare case of an infant with a testicular tumor with a history of a mother having ovarian cancer and undergoing surgery and chemotherapy during pregnancy. A five-month-old boy presented with a right testicular mass of 3 weeks duration. Ultrasound of the bilateral scrotum showed a homogenous mass with increased vascularity, and his Alpha-fetoprotein (AFP) result was high at 4300ng/ml. We performed a high ligation right orchidectomy. Computer Tomography of the thorax, abdomen, and pelvis was done, and no evidence of metastasis was found.

Keywords: *Infant Testicular Tumour; Ovarian Cancer; Pregnancy; Vertical Transmission*
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Introduction

Cancer during pregnancy is not an uncommon condition; however, maternal to fetal transmission of cancer cells is a rare phenomenon; it is not unexpected due to uteroplacental blood flow representing 10% of maternal cardiac output (1) . There are approximately 100 reported cases, most representing metastasis confined to the placenta(2). It is a rare occurrence, given the placenta barrier and fetal immune system, that can prevent the possibility of tumour transmission to the placenta and fetus. However, the risk of transmission still can occur when the separation of the fetal and maternal blood systems is breached; maternal intravascular tumor cells can pass through the placenta and end up in the fetus (3).

This case report presents a rare case of a mother with ovarian cyst adenocarcinoma during pregnancy, then her infant develops a right testicular tumor (yolk sac tumor). To the best of our knowledge, there is no reported case regarding this condition with two different types of tumour cells.

Presentation of the case

A 5-month-old boy presented with right testicular swelling of 3 weeks; it was painless, with no redness, and there was no other complaint. On clinical examination, his right testis, size 3x3 cm, located in the scrotum, was regular and had no skin changes. His blood investigation results were AFP 4436 ng/ml, Lactate dehydrogenase 475 U/L, Beta Human Chorionic gonadotropin <0.1 ng/ml.

Further history, antenatally, his mother was diagnosed with right ovarian cancer at 16 weeks POA. Initially it was incidental finding during booking, USG at 8 weeks, there is right ovarian cystic multiloculated with thick septae. She has undergone a right cystectomy and omentectomy at 16 week period of amenorrhea (POA). The histopathological examination revealed low-grade cystoadenocarcinoma of the right ovary. Then, his mother was given intravenous chemotherapy with a total of 4 cycles started at 19 weeks of POA. He was delivered via emergency Caesarean section at 36 weeks since the mother had pre-eclampsia and leaking liquor. Post delivery, the baby was well and was monitored until day 7 of life and then was discharged well.

Further investigation by ultrasound of the scrotum and abdomen showed the right testis homogenously enlarged with increased vascularity with size 2.1 x2.6 x3.1 cm (Figure A). We performed a high-ligation right orchidectomy via an inguinal approach. Intraoperatively, the right testis size 4x3 cm, dilated and engorged testicular vessels, and no lymph node was

noted at the right inguinal region (Figures B and C). Subsequent histopathological examination showed the presence of a tumor replacing the testicular parenchyma infiltrating rete testis (Figure D). There are Schiller Duval bodies characterized by fibro vascular core within the cystic space, which is lined by neoplastic cells (Figure E). Immunohistochemical stains showed positive for CKAE1&3, AFP, and CD117 and harmful for CD30 (Figure F). The overall features are consistent with prepubertal type yolk sac tumours. His CT TAP showed no evidence of distant metastasis. His post-operative AFP is reducing, and the latest one is 345ng/ml. No chemotherapy is done in view of stage I disease, and only monitoring his condition and AFP level.

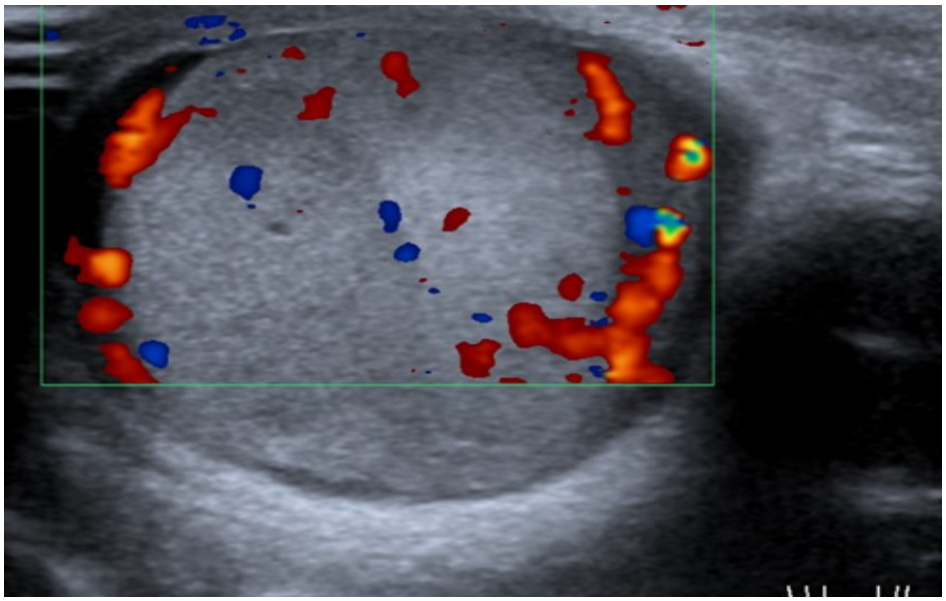

Figure A: showed right testis is homogenously enlarged and increased in vascularity. It is measuring 2.1cm x 2.6cm x 3.1cm (AP x W x CC).

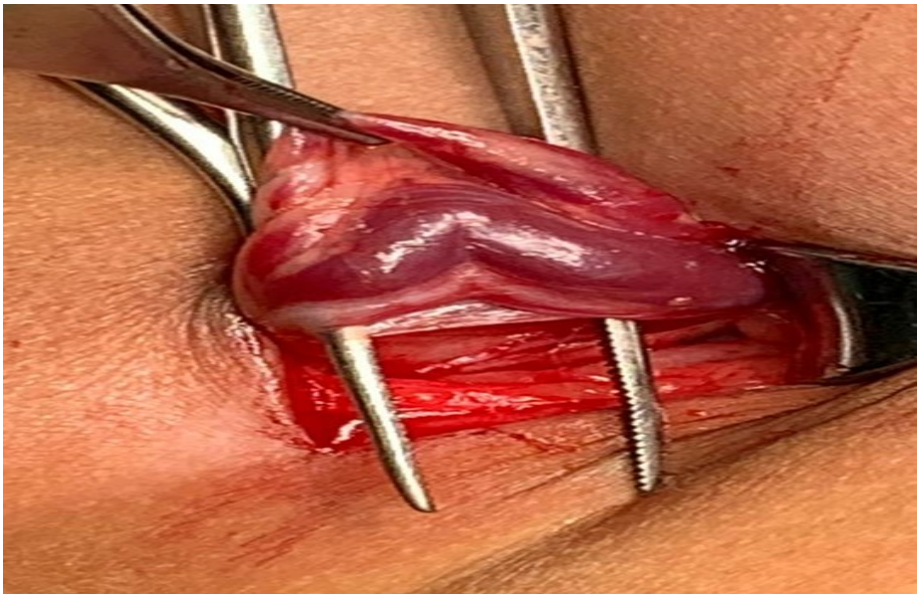

Figure B: showed engorgement of right testicular vessel

Figure C: showed the right testicular mass with spermatic cord that was removed during high ligation orchidectomy.

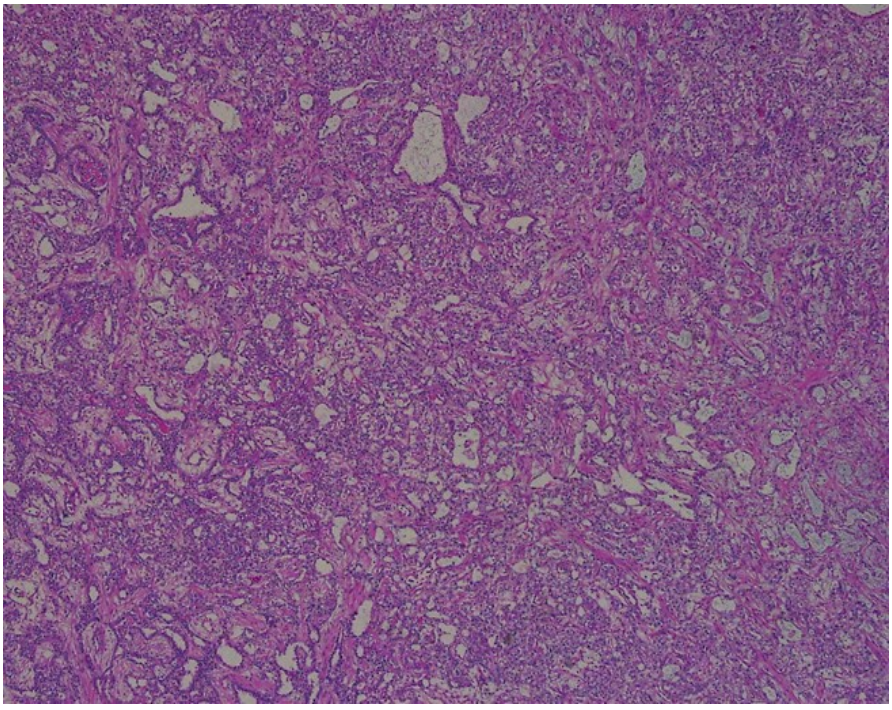

Figure D: Tumor arranged in microcystic reticular pattern admixed with macrocystic, alveolar, and solid sheet architecture. The tumor cells are moderately pleomorphic, with vesicular nuclei, some shows prominent nucleoli in clear to eosinophilic cytoplasm

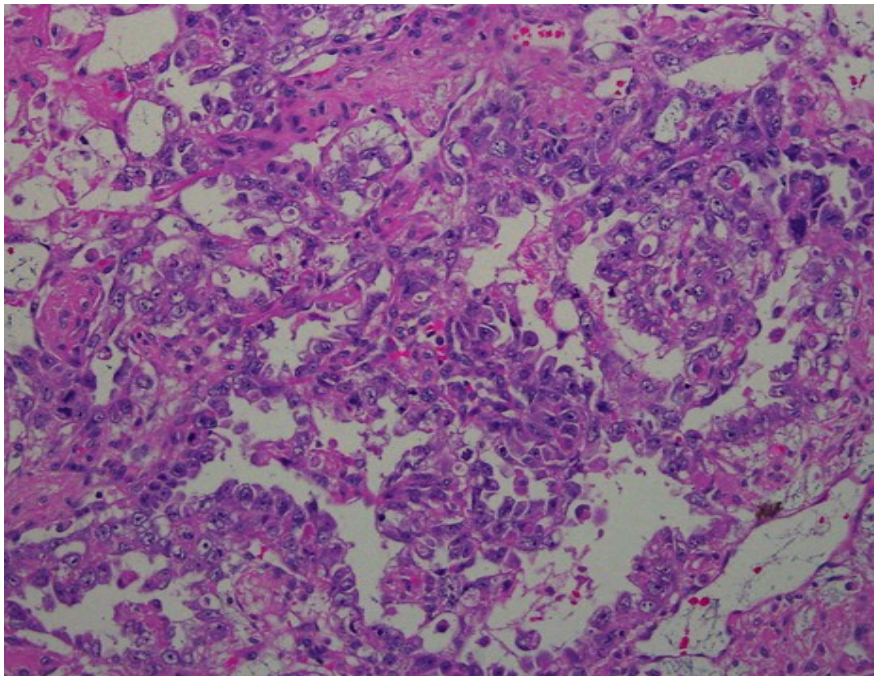

Figure E: Presence of Schiller Duval bodies.

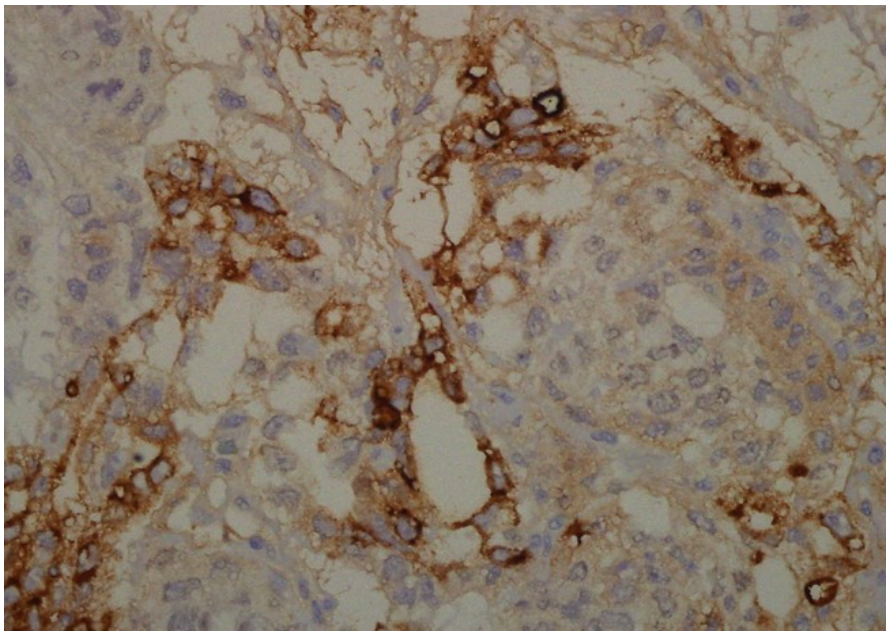

Figure F: Tumor cells are focally positive for AFP

Discussion

Cancer with coexistence of pregnancy is not uncommon, with a frequency of around 1 case of cancer every 1,000 gestation (4). Vertical transmission is a rare phenomenon that can occur during pregnancy. Vertical transmission is defined as the spread of tumor cells from mother to fetus through the placenta. It is rare, probably due to the placental barrier and fetal immune system. The Placenta barrier plays a role in the syncytiotrophoblast cells' recognition and rejection of foreign maternal antigens expressed by the cancer cells (4,5). The transmission is thought to be haematogenous spread, although lymphatic dissemination and contiguous invasion have also been considered(4).

The transmission to the placenta or fetus is most frequently seen in melanoma (30%), leukemias and lymphomas (15%), breast cancer (14%), and lung

cancer (13%), followed by bone or soft tissue sarcomas, gynaecological malignancies, gastric cancer or other tumors (6). Furthermore, the tumour in the fetus that was reported is the same type as a maternal tumour that is suggestive of metastasis. The average age of presentation of vertical transmission of maternal tumor is 4–5 months after delivery but ranges from birth to 20 months (5). A baby that was delivered via mother with malignancy during pregnancy needs to be properly examined and followed up to look for the risk of possibility to develop metastasis or malignancy (1).

Every reported case regarding fetus and placental metastasis showed evidence that cancer cells in the mother and infant are from the same types. However, in our case, the mother and infant had different types of cancer cells, so the possibility of metastasis is unlikely. The occurrence of testicular cancer in infants in correlation with the mother of ovarian cancer during pregnancy has not yet been reported with different types of tumors. There is need further evaluation or study need to be done to check the possibility genetic link between these two types of cancer.

Conflict of interest: Authors declare no conflict of interest involved.

Ethical Considerations: Verbal consent taken from the mother to take picture and to publish this case report.

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