Choriocarcinoma in a Twenty Four Month Old Child : A Case Report

Moni Subedi[1], Sushant Pokhrel[2], Shivahari Ghimire[3]

[1]Department of Pathology, Pokhara Academy of Health Sciences, Pokhara
[2]Department of Laboratory Medicine, Manmohan Institute of Medical Sciences, Kathmandu
[3]Laboratory Unit, Department of Pathology, Pokhara Academy of Health Sciences, Pokhara

Correspondence

Dr Moni Subedi, MD
Pokhara Academy of Health Sciences, Pokhara, Nepal

Email: monisubedi20@hotmail.com

Article received: 9th June, 2021
Article accepted: 30th June, 2022

ABSTRACT

Choriocarcinoma is a progressive malignant neoplasm of trophoblastic cells. It is of two types: gestational or non-gestational choriocarcinoma. Gestational choriocarcinoma is derived from placental trophoblast and non-gestational choriocarcinoma is derived from germ cells. The hematogenous spread is common in the lungs, liver, brain, and other visceral organs. The incidence of germ cell tumors in children is rare. In this case study, we report a case of a two years old child with a germ cell tumor, choriocarcinoma based on microscopic and laboratory findings. The majority of studies have suggested that the diagnosis of pure non-gestational choriocarcinoma should be limited to premenarcheal patients. Timely diagnosis and the use of chemotherapy can lead to a better survival rate.

Keywords: Choriocarcinoma, Non-gestational, Trophoblastic cells, neoplasm

INTRODUCTION

Choriocarcinoma is the rapidly invasive and widely metastatic neoplasm of trophoblastic origin1–3. According to its histological origin, it is classified as either gestational or non-gestational choriocarcinoma. Gestational choriocarcinoma derived from placental trophoblasts and non gestational choriocarcinoma mainly arises from germ cells with ovarian origin and is considered to be rare in incidence3. The beta fraction of the human chorionic gonadotropin hormone is a marker of rapidly progressively and hemorrhagic choriocarcinoma germ cell tumors4. Ovarian choriocarcinoma in children is extremely rare with less than 5% of all ovarian cancer5. Because of its rarity in children, the diagnosis is delayed. Non gestational choriocarcinoma has a poor prognosis and needs more aggressive management. In general, the non-gestational type has only been clinically diagnosed in patients who were sexually immature or those who were unable to conceive6. Here, we present the firstly reported case from Nepal with choriocarcinoma, diagnosed in a 24 month old female child.

Case Description

A 24-month-old female child was brought to the Emergency Unit of Pokhara Academy of Health Sciences with the chief complaint of pain over the periumbilical region and a single episode of vomiting with no fever. As per abdominal examination, suprapubic and periumbilical tenderness was seen. Ultrasound sonography (USG) examination revealed no definite cause for abdominal pain. Patient was planned for emergency surgery under the provisional diagnosis of acute appendicitis, during which a cyst was observed in the left ovary. Partial left ovarian cystectomy with an appendectomy was done on August 8th, 2019. The per-operative diagnosis was left ovarian cyst with acute appendicitis. Appendix and ovarian cyst were

sent for histopathological examination.

On gross examination, the ovarian cyst was encapsulated, soft and measured 4×2×1 cm^3. On cut section of the cyst, blood clot with hemorrhagic coagulation necrosis was noted with viable areas in certain regions. Microscopic examination revealed areas of extensive hemorrhage with infiltrating tumor cells(Fig 2). The tumor cells were characterized by an intimate admixture of two cell types. The mononuclear cells were medium in size, polygonal with clear or amphophilic cytoplasm, and exhibited a well-defined cell border. The nuclei of these cells were round and hyperchromatic, with conspicuous nucleoli. These findings indicated cytotrophoblastic cells. Few multinuclear giant cells that varied in shape and size, and were irregularly shaped with abundant dense amphophilic or vacuolated cytoplasm, and multiple hyperchromatic nuclei were found. These multinuclear cells were regarded as syncytiotrophoblasts. No evidence of other germ cell elements was observed. Few mitotic figures were seen. Areas of degenerated mixed inflammatory cells were also noted.

Follow-up investigation for tumor markers with hemoglobin and total counts were analyzed (Table 3). β-HCG(2870 µIU/ml) and AFP levels (5.63 µIU/ml) were increased.

The final diagnosis in our institute was suggestive of germ cell tumour-choriocarcinoma. For further treatment, the patient was referred to a higher center by the respective department, where a pediatric oncologist reviewed the case. The histological slides were sent for review to a diagnostic center abroad. On second opinion also, the diagnosis of germ cell tumor was given.

The case was followed up via contact with parents. The child was taken abroad for treatment where chemotherapy was commenced. On follow up, we found the final discharge report of the case as germ cell tumor, choriocarcinoma stage 4 with right ovarian mass, and lung metastasis. The patient is stable to date.

Laboratory Findings

The baseline investigations are presented in tables below. A mildly elevated level of serum lactate dehydrogenase 335 IU/L (Normal 25-250 IU/L) and Alfa fetoprotein 5.63 IU/ml (Normal Up to 4.00 IU/ml) was seen. Highly elevated level of a beta fraction of Human Chorionic Gonadotropin Hormone was noted i.e. 2870 µIU/ml (Normal<10 µIU/ml).

Table 1: Haematological parameters on admission

Parameters	Results	Reference Ranges
Hemoglobin	10.3 ms%	(11.9-14.6) gms%
Red Blood Cells	4.0 millions cells/ µl	(4.44-5.61) millions cells/ µl
Total Leukocyte Count	22,000 cells/µl	(4,000-11,000) cells/µl
Differential Leukocyte count		
Neutrophils	75%	(40-70) %
Lymphocytes	20%	(20-45) %
Eosinophils	02%	(1-6) %
Monocytes	03%	(2-10) %
Basophils	00%	1. %
Platelet count	3,31,000 cells/ µl	(1,50,000-4,50,000) cells/ µl

Table 2: Biochemical parameters on admission

Random Blood Glucose	128 mg/dl	(70-140) gm%
Urea	21 mg/dl	(15-45) mg/dl
Creatinine	0.6 mg/dl	(0.4-1.4) mg/dl
Sodium	138 mmol/L	(135-145) mmol/L
Potassium	3.4 mmol/L	(3.5-5.1) mmol/L
Uric acid	3.1 mg/dl	(2.6-6.0) mg/dl
Liver Function Test	0.36 mg/dl	(0.2-1.3) mg/dl
Bilirubin, Total	0.1 mg/dl	(0.0-0.3) mg/dl
Bilirubin,Conjugated		
Alanine Amino Transferase (ALT/ SGPT)	14 IU/L	(5-45) IU/L
Aspartate Amino Transferase (AST/SGOT)	28 IU/L	(5 – 45) IU/L
Total Protein		
Albumin	7.2 g/dl	(6.3-8.2) g/dl
Alkaline Phosphatase	3.5 g/dl	(3.5-5.0) g/dl
	288 IU/L	(38-126) IU/L
Lactate Dehydrogenase	335 IU/L	(25-250) IU/L

Table 3: Post-operative investigations

CA 125	19 U/ml	<35.0 U/ML
CEA (Carcinoembryonic antigen)	1.4 ng/ml	<5 ng/ml
β-HCG	2870 µIU/ml	<10 µIU/ml
AFP	5.63 IU/ml	Up to 4.00 IU/ml
Haemoglobin	8.2 gms%	(11.9-14.6) gms%
Total leucocyte count	11,900 cells/µl	(4,000-11,000) cells/µl

DISCUSSION

Choriocarcinoma is a rare and aggressive malignant tumor with less than 5% of all ovarian malignancies in Western countries, which may be either gestational or non-gestational[5-7]. Choriocarcinoma is characterized by early hematogenous spread to the lungs, (invasion with malignant cells i.e cytotrophoblast, intermediate trophoblast and syncytiotrophoblast) which is a finding in our case as well. The majority of the tumors occur in combination with other germ cell neoplasms. Pure choriocarcinoma of the ovary has been defined as a tumor that occurs in the absence of all other germ cell tumors. No additional components of germ cell tumors were found in association with the present tumor[8].

The prognosis is better in gestational origin in comparison to non-gestational origin[7]. Gestational origin commonly occurs with ectopic pregnancy, spontaneous abortion with a highly elevated level of β-HCG[9,10]. In our study, the level of AFP was increased, which is supported by Seppal M. et al[11]. AFP is mainly increased due to mild secretion by trophoblast. The aggressive nature of choriocarcinoma germ cell tumors is extensively rare in children[5]. In 66% of patients, a good prognosis with chemotherapy was found[8]. In this report, a germ cell tumor choriocarcinoma was treated surgically and subsequently chemotherapy was initiated.

Immunohistochemical techniques should be used to differentiate gestational and non-gestational tumors for the efficient treatment of choriocarcinoma. Proper and early investigations, surgical removal, and use of chemotherapy helps to improve patient's survival and can control metastasis.

IMAGES

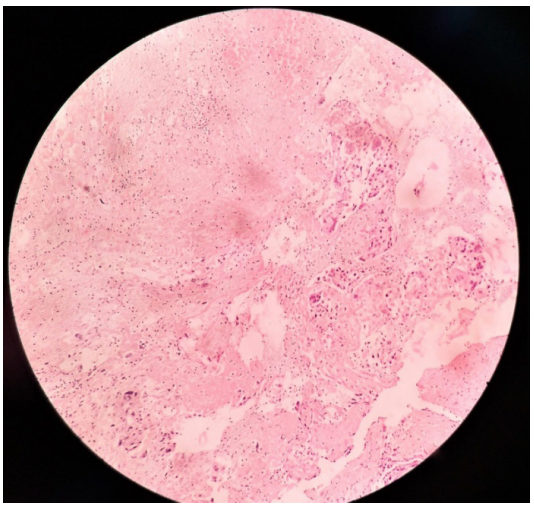

Fig 1: 10X Atypical cells

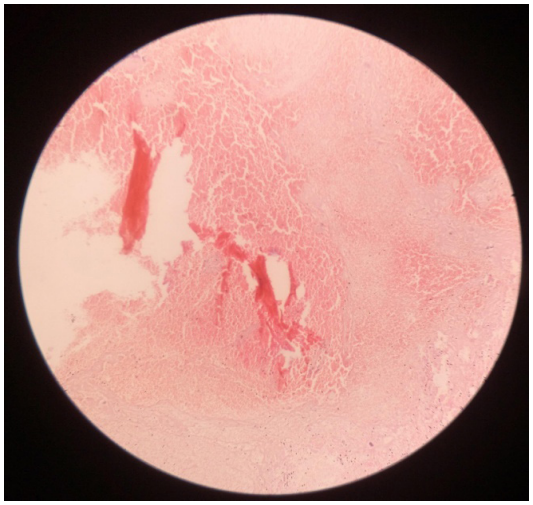

Fig 2: Areas of extensive hemorrhage

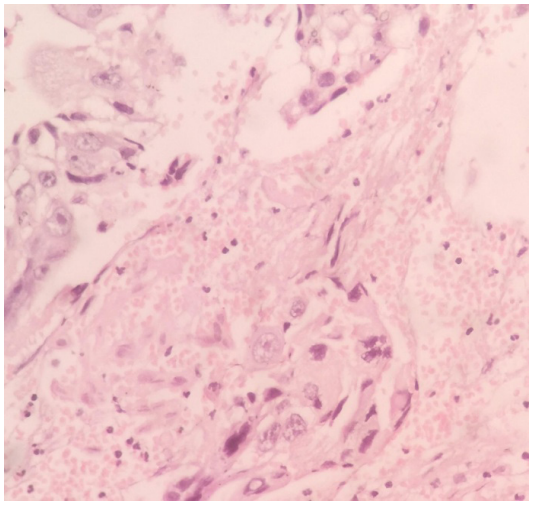

Fig 3: 40X view of malignant cells

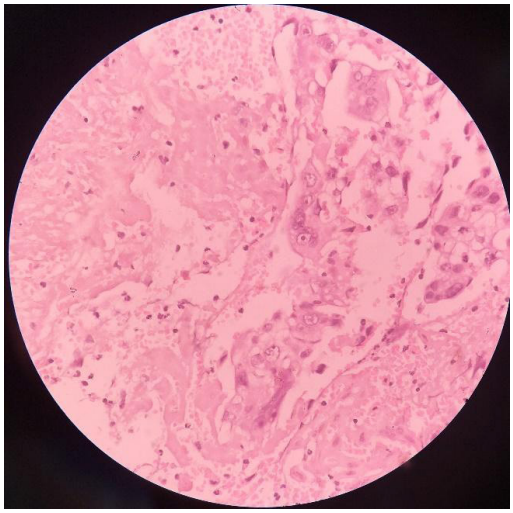

Fig 4: 40X view of malignant cells

Consent

The patient had given written informed consent for the publication of her clinical details and microscopic findings.

Acknowledgement

We firstly thank the patient and her parents for participating in this study. Our special thanks go to all laboratory staff, management, and officials of Pokhara Academy of Health Sciences, Kaski for providing the opportunity to carry out the case report work.

Conflict of interest

None

REFERENCES

1. Desai, N. R., Gupta, S., Said, R., Desai, P. & Dai, Q. Choriocarcinoma in a 73-year-old woman: A case report and review of the literature. J. Med. Case Rep. 4, 2–6 (2010).

2. Dilek, S., Pata, Ö., Tok, E. & Polat, A. Extraovarian nongestational choriocarcinoma in a postmenopausal woman. Int. J. Gynecol. Cancer 14, 1033–1035 (2004).

3. Whaley, R. D., Dougherty, R. E., Cheng, L. & Ulbright, T. M. Fluorescence In Situ Hybridization for the X and Y Chromosome Centromeres Helps Differentiate Between Gestational and Nongestational Choriocarcinoma in Clinically Ambiguous Cases. Arch. Pathol. Lab. Med. 144, 863–868 (2020).

4. Salazar-Mejía, C. E. et al. Choriocarcinoma Syndrome as an Initial Presentation of Testicular Cancer. Case Rep. Oncol. Med. 2018, 1–3 (2018).

5. Çorakçi, A. et al. Pure nongestational choriocarcinoma of ovary. Arch. Gynecol. Obstet. 271, 176–177 (2005).

6. Lv, L., Yang, K., Wu, H., Lou, J. & Peng, Z. Pure choriocarcinoma of the ovary: A case report. J. Gynecol. Oncol. 22, 135–139 (2011).

7. Rawal, G., Ahluwalia, C., Yadav, A. K. & Dhawan, I. Case Report Primary pure non-gestational choriocarcinoma of ovary : a rare case report. 6, 4166–4169 (2017).

8. Hayashi, S. et al. Primary non-gestational pure choriocarcinoma arising in the ovary: A case report and literature review. Oncol. Lett. 9, 2109–2111 (2015).

9. Lee, S.-C. et al. Mixed Testicular Germ Cell Tumor Presenting as Metastatic Pure Choriocarcinoma Involving Multiple Lung Metastases That Was Effectively Treated with High-dose Chemotherapy. Cancer Res. Treat. 41, 229 (2009).

10. Choi, Y. J., Chun, K. Y., Kim, Y. W. & Ro, D. Y. Pure nongestational choriocarcinoma of the ovary: A case report. World J. Surg. Oncol. 11, 2–4 (2013).

11. Seppälä, M., Bagshawe, K. D. & Ruoslahti, E. Radioimmunoassay of alpha-fetoprotein: A contribution to the diagnosis of choriocarcinoma and hydatidiform mole. Int. J. Cancer 10, 478–481 (1972).