A case of a man with primary choriocarcinoma of the lung with abnormally high β-human chorionic gonadotropin levels in a bloody pleural fluid effusion

Kazuhiko Iwasaki[1], Kazuyoshi Watanabe[2], Hideharu Kimura[1], and Seiji Yano[1]

[1]Kanazawa University Graduate School of Medical Sciences
[2]Japan Community Health Care Organization Kanazawa Hospital Department of Orthopedic Surgery

July 12, 2022

Abstract

A 69-year-old man presented with bloody pleural fluid effusion with elevated human chorionic gonadotropin (hCG) levels obtained by thoracentesis. The patient's condition rapidly declined, and he died. An autopsy revealed primary lung choriocarcinoma. The early diagnosis of choriocarcinoma based on β-hCG levels in pleural fluid may be possible.

A case of a man with primary choriocarcinoma of the lung with abnormally high β-human chorionic gonadotropin levels in a bloody pleural fluid effusion

Kazuhiko Iwasaki[1,2], Kazuyoshi Watanabe[1], Hideharu Kimura[2], Seiji Yano[2]

[1]Department of Respiratory medicine, Japan Community Health Care Organization Kanazawa Hospital, Kanazawa, Ishikawa, Japan

[2]Department of Respiratory medicine, Kanazawa Graduate school of Medical Sciences, Kanazawa, Ishikawa, Japan

Corresponding author: Kazuhiko Iwasaki , MD

Affiliation: Department of Respiratory Medicine, Kanazawa Graduate school of Medical Sciences, Kanazawa, Ishikawa, Japan

Postal address: 13-1 Takara-machi, Kanazawa, Ishikawa, 920-8641, Japan

Tel: +81-76-265-2146, Fax: +81-76-234-4215

Mail: yahuu42japann@gmail.com

ORCID: 0000-0002-7563-947X

Funding information: This research was not supported by any specific grant from any funding agency in the public, commercial, or non-profit sectors. Therefore, no funding body was involved in the study design; the collection, analysis, and interpretation of the data; the wrting of the manuscript; or the decision to submit the manuscript for publication.

Abstract

A 69-year-old man presented with bloody pleural fluid effusion with elevated human chorionic gonadotropin (hCG) levels obtained by thoracentesis. The patient's condition rapidly declined, and he died. An autopsy

revealed primary lung choriocarcinoma. The early diagnosis of choriocarcinoma based on β-hCG levels in pleural fluid may be possible.

Keywords

Choriocarcinoma, Bloody pleural fluid effusion, β-human chorionic gonadotropin

Key Clinical Message

We report a case of a man with primary choriocarcinoma of the lung who died within a short period. Bloody pleural fluid effusion with high human chorionic gonadotropin level may be used as a marker for early diagnosis of choriocarcinoma.

Case presentation

A 69-year-old man with a history of light smoking presented to our hospital with dyspnea. Chest radiography and computed tomography revealed left pleural effusion in the left upper lobe, multiple lung metastases, and liver metastases (Figure 1, A and D-F). Three pleural fluid tests were performed, and a bloody pleural effusion was obtained (Figure 2, A); however, only a few atypical cells were found in the effusion, and bronchoscopy showed no abnormal findings. Traumatic hemothorax was ruled out based on imaging and episodes. The patient showed rapid pleural effusion within 2 weeks (Figure 1, B and C), and his general condition deteriorated markedly. Palliative treatment was the first choice because of dyspnea. The patient died of respiratory failure and was discharged from the hospital on the 18th day. An autopsy revealed no testicular tumor, and a diagnosis of primary choriocarcinoma of the lung was made (Figure 2, B-D). Pleural fluid and serum collected during hospitalization showed abnormally high levels of β- human chorionic gonadotropin (β-hCG).

2. Discussion and Conclusion

This case illustrates two important clinical points.

First, choriocarcinoma is considered a tumor tissue high in blood flow [1] and can thus cause bloody effusions. It should therefore be one of the differential diagnoses when the patient has a bloody pleural effusion.

Second, while high serum β-hCG levels in choriocarcinoma are useful for early diagnosis, cytological diagnosis is difficult because of hemorrhage and necrosis [2]. High β-hCG levels in pleural fluid samples may be useful for early diagnosis.

Therefore, it is recommended that β-hCG be measured in cases where bloody pleural effusion is obtained.

Author contributions

KI wrote the initial draft of the manuscript and was responsible for manuscript drafting and image modification. KI , KW, HK and SY were directly involved in the treatment, critically revised the manuscript, and approved the final version.

ACKNOWLEDGMENTS: None.

Conflict of interest: None.

CONSENT: Consent for publication of this report was obtained from the living patients prior to submission.

Data availability statement: No datasets were generated or analyzed for this case report. Figure legends

Fig. 1

(A) Chest radiograph obtained 3 months prior to admission showing nodular shadows in the left upper lobe.

(B) Chest radiograph on admission showing a left upper lobe mass shadow, left pleural effusion, and multiple intrapulmonary metastases.

(C) Chest radiograph on day 10 of hospitalization showing overall worsening of shadows.

(D-F) Computed tomography (CT) scan on admission showed a 60 mm large mass shadow (left B1+2, blue arrow), indicative of a primary tumor and multiple metastatic tumors in the bilateral lungs. In addition, a liver metastatic tumor (red arrow) is also observed.

Fig. 2

(A) The pleural fluid effusion is bloody and exudative. Its pH was 7.3, with normal glucose and adenosine deaminase values and a negative bacterial culture test. Cytology revealed atypical cells, but did not lead to a diagnosis. The pleural fluid β-hCG was elevated at 3624 mIU/mL (serum β-hCG was 27000 mIU/mL).

(B) The left lung showing protruding masses on both sides of all lobes when it was removed for autopsy.

(C) Histology showing Langhans-like atypical cells surrounding syncytial cell-like atypical cells, resembling immature villi.

(D) Immunostaining is positive for hCG. Immunostaining for NapsinA, ChromA, TF-1, Synapto, CK5/6, p40, CK20, and CD56 were all negative (data not shown).

References

1. Umemori Y, Hiraki A, Aoe K, Murakami T, Maeda T, Matsuda E, Takeyama H. Primary choriocarcinoma of the lung. Anticancer Res. 2004 May-Jun;24(3b):1905-10. PMID: 15274374.

2. Kobayashi A, Hasebe T, Endo Y, Sasaki S, Konishi M, Sugito M, Kinoshita T, Saito N, Ochiai A. Primary gastric choriocarcinoma: two case reports and a pooled analysis of 53 cases. Gastric Cancer. 2005;8(3):178-85. doi: 10.1007/s10120-005-0332-9. PMID: 16086121.