LETTER TO THE EDITOR

Diffuse large B-cell lymphoma presenting with type B lactic acidosis and hemophagocytic syndrome

To the Editor,

We report the case of a 51-year-old woman who was diagnosed with diffuse large B cell lymphoma presenting with hemophagocytic syndrome complicated by type B lactic acidosis. The patient came to our hospital because of an intermittent fever for 1 week. The initial laboratory findings revealed the following: white blood cell count, 3600/μL; hemoglobin, 10.1 g/dL; platelet, 28,000/μL. Her serum C-reactive protein level was 47.7 mg/L, and arterial blood gas analysis showed pH 7.28, PCO₂ 38.1 mmHg, and HCO₃ 17.6 mmol/L. Her lactate level was 11.8 mEq/L, sodium 135 mg/dL, and chloride 104 mg/dL. A high anion gap metabolic acidosis related to lactic acidosis was noted. She had a pulse rate of 95 beats/minute, and her blood pressure was 130/75 mmHg.

The bone marrow examination revealed hemophagocytosis (Fig. 1A). The patient’s computed tomography scan revealed a right adrenal gland tumor of about 6.8 cm and a liver nodule of about 4.7 cm in S6-S7 (Fig. 1B). A liver nodular biopsy revealed diffuse, large lymphoid cells containing coarse chromatin and scant-to-moderate cytoplasm (Fig. 1C), and the immunohistochemical analysis revealed that the neoplastic cells were positive for CD20 (Fig. 1D), Bcl-2, and Ki-67 (data not shown), but negative for CD3. The final diagnosis was diffuse large B-cell lymphoma complicated by type B lactic acidosis and hemophagocytic syndrome. Positron emission tomography revealed increased fluorodeoxyglucose avidity over the pelvic, liver, bilateral adrenal gland, shoulder, and right neck areas (data not shown).

The patient was then treated with a systemic chemotherapy consisting of EPOCH (etoposide, epirubicin, vincristine, cyclophosphamide, and prednisolone). Because the patient suffered from dyspnea after undergoing chemotherapy, we checked her arterial blood gas analysis; the results showed deterioration, with pH 7.18, PCO₂ 29.3 y values were as follows: lactate level 18.3 mEq/L, uric acid 7.2 mg/dL, potassium 6.1 mmol/L, and phosphate 7.1 mg/dL. The patient was diagnosed to have lactic acidosis with respiratory decompensation and tumor lysis syndrome. Chemotherapy was discontinued, and a pulse therapy of methylprednisolone (500 mg) was given every 12 hours for 3 days. After the pulse therapy, her lactate level decreased to 2.6 mEq/L, and her metabolic acidosis and general condition improved gradually.

The cause of the development of type B lactic acidosis in hematological malignancies is likely multifactorial. Blood glucose may be converted one step beyond pyruvate to lactic acid even with abundant oxygen by tumor cells [1]. Severe liver or kidney dysfunction may reduce the hepatic utilization of lactate via gluconeogenesis and lead to lactate accumulation [2]. The mechanism was also possible because of the loss of mitochondrial function [3]. The association of hemophagocytic syndrome with B-cell non-Hodgkin’s lymphoma remains unclear. Lymphoma-associated hemophagocytosis develops rapidly and is fatal within several months of onset [4]. However, it is not an unfavorable prognostic factor for large B-cell lymphoma. The principal treatment is immune suppression to reduce the cytokine storm [5].

To the best of our knowledge, this is the first study to report this type of clinical findings. Type B lactic acidosis should be considered in patients with hematologic disease and clinical findings of dyspnea with high anion gap metabolic acidosis and stable vital signs but no specific chest X-ray findings.
References

[1] Pedersen PL. Warburg, me and Hexokinase 2: multiple discoveries of key molecular events underlying one of cancers’ most common phenotypes, the ”Warburg Effect”, i.e., elevated glycolysis in the presence of oxygen. J Bioenerg Biomembr 2007;39:211-22.


Chia-Yu Kuo
Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan

Shu-Ting Yeh
Chiung-Tang Huang
Division of Hematology—Oncology, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan

Sheng-Fung Lin*
Division of Hematology—Oncology, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan

Faculty of Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan

*Corresponding author. Division of Hematology—Oncology, Department of Internal Medicine, Kaohsiung Medical University Hospital, Number 100, Tzyou 1st Road, Kaohsiung 807, Taiwan.

E-mail address: shlin@kmu.edu.tw (S.-F. Lin)