CASE REPORT

A Case of Nasopharyngeal Carcinoma with Paraneoplastic Leukemoid Reaction: A Case Report

Dai Wee Lee, MBBS*, Daren Choon Yu Teoh, FRCR, Flora Li Tze Chong, MCO

Oncology and Radiotherapy Department, Sabah Women and Children Hospital, Karung Berkunci No 187, 88996 Kota Kinabalu Sabah

SUMMARY

We present a case of nasopharyngeal carcinoma complicated with hyperleucocytosis. After ruling our other causes we concluded that the hyperleucocytosis was due to paraneoplastic leukemoid reaction (PLR). The overall survival was 15 months which is rare among patients with PLR.

KEY WORDS:
Nasopharyngeal carcinoma, paraneoplastic leukemoid reaction, hyperleucocytosis

INTRODUCTION

Hyperleucocytosis has been variably defined as white cell count above 50K/uL or 100K/uL. Its occurrence in association with solid tumours has been reported to be 1-4%.[1] We report a rare case of nasopharyngeal carcinoma complicated with hyperleucocytosis caused by paraneoplastic leukemoid reaction, with a 175K/uL leucocyte count.

CASE REPORT

Mr YS is a 41-year-old Malay gentleman who was referred from the Ear-nose-throat Department to the Oncology Department for nasopharyngeal carcinoma (NPC), stage T1N3bM0 (WHO Type II) in November 2013. He presented with 1 year history of left neck mass. He had no other symptoms of NPC. He has no other medical disorders. Upon assessment, he was pale, afebrile with a left neck mass 12x9cm in size. He had no other palpable lymph nodes and no hepatosplenomegaly. Staging CT scan showed a 2x3cm mass in the left fossa of Rosenmuller, obliterating the left torus tubarious, matted left cervical nodes from level of angle of mandible till supraclavicular region (level II to level V) measuring 11.4x7.0x8.0cm; thoracic and abdominal scans showed no distant metastasis. He was planned for induction chemotherapy (3 cycles of Docetaxel, Cisplatin and 5-Fluorouracil) followed by radical chemoradiation. His pre-chemotherapy blood investigation showed white cell count (WCC) of 175K/uL (neutrophils predominant), haemoglobin of 7.8g/dL and platelet count of 178K/uL. Hemoglobin level subsequently improved with blood transfusion to 10.4g/dL. Peripheral blood film showed leucocytosis, predominantly matured granulocytes with no blast cells or abnormal cells seen. There was no other signs or symptoms suggestive of infection, bone metastasis, hemorrhage, hematological malignancy; and no use of steroids which could attribute to the hyperleucocytosis. Thus we concluded that paraneoplastic leukemoid reaction was the most likely diagnosis. First cycle of chemotherapy was administered. Post chemotherapy WCC reduced to 47.6K/uL. In view of reducing trend of WCC, no bone marrow aspiration was done. Signs and symptoms of tumour lysis syndrome were monitored. The WCC trend observed further strengthen the diagnosis of paraneoplastic leukemoid reaction. Later on patient's WCC reduced and maintained at 15 to 17K/uL. He later went on to complete subsequent cycles of chemotherapy and radical chemoradiation. Unfortunately patient passed away in February 2015 due to disease progression, therefore the overall survival is approximately 15 months.

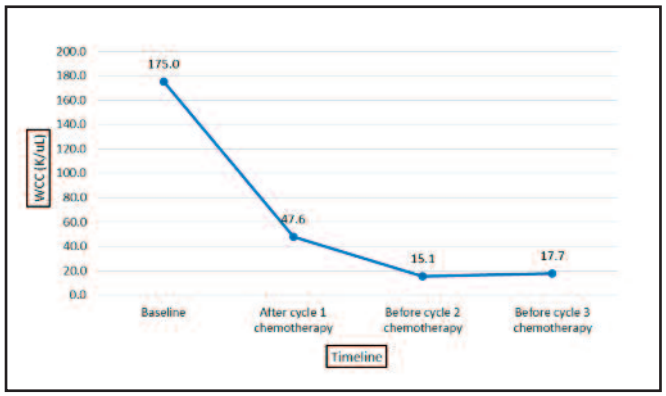

Fig. 1: Leucocyte count trend in relation to cycles of chemotherapy.

DISCUSSION

Common causes of hyperleucocytosis in solid tumour patients include infections, newly developed hematological cancers, corticosteroid or hematopoietic growth factors usage, hemorrhage and bone metastasis with necrosis. Paraneoplastic leukemoid reaction (PLR) should be considered after ruling out the causes above.

PLR is a type of hematological paraneoplastic syndrome. It is speculated that in this syndrome there is overproduction of cytokines such as interleukin-6, interleukin-10 and granulocyte-monocyte colony-stimulating factor (GM-CSF).[2-3] These cytokines will then drive bone marrow to produce high levels of leucocytes. Typically large tumours or extensive disease drive this phenomenon. However patients with PLR

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Corresponding Author: Dai Wee Lee, Likas Hospital, Oncology, Karung Berkunci No 187, Kota Kinabalu, Sabah 88996, Malaysia
Email: eeldavid@hotmail.com

are typically stable despite heavy tumour burden or metastatic disease.

Due to its rarity there are very limited studies regarding PLR. The largest study to date is a retrospective study by Granger et al that observed 3770 oncology patients with hyperleucocytosis.[4] Among them 758 had solid tumours, only 77 patients (10%) were found to have PLR. It is noted that the most prevalent primary malignancy among these patients were non-small cell lung cancer (13 patients). While there were only 4 patients with head and neck cancer. Interestingly most of those 77 patients had large tumour burden (either bulky tumour or metastatic disease). The finding of enlarged left cervical lymph node in the discussed patient is consistent with Granger's findings. According to this study, PLR is associated with poor outcomes. Seventy-eight percent dies within 12 weeks from the first detection of hyperleucocytosis.[4] A case of metastatic carcinoma with PLR and leucocyte count of 180K/uL was reported and the patient died after 3 days since the detection of hyperleucocytosis.[5] Only 10% patients were observed to survive more than 1 year after successful treatment of the malignancy.[4]

CONCLUSION

This is a rare case of nasopharyngeal carcinoma with paraneoplastic leukemoid reaction (PLR) with overall survival of 15 months. It is important to rule out life threatening causes prior to making a diagnosis of PLR.

REFERENCES

1. McKee LC Jr. Excess leukocytosis (leukemoid reactions) associated with malignant diseases. South Med J. 1985;78: 1475-82.
2. Toyoda AM, Chikamatsua AK, Sakakuraa K, *et al.* A case of squamous cell carcinoma of the head and neck producing granulocyte-colony stimulating factor with marked leukocytosis. Auris Nasus Larynx. 2007;34: 267-71.
3. Tanaka K, Nibu K. Laryngeal squamous cell carcinoma with ectopic production of granulocyte colony-stimulating factor and parathyroid hormone-related protein. Int J Clin Oncol. 2005; 10(3): 195-7.
4. Granger JM, Kontoyiannis DP. Etiology and outcome of extreme leukocytosis in 758 nonhematologic cancer patients: a retrospective, single-institution study. Cancer. 2009 Sep 1; 115(17): 3919-23.
5. Chakraborty S, Keenportz B, Woodward S, *et al.* Paraneoplastic leukemoid reaction in solid tumurs. Am J Clin Oncol. 2013 Oct 18