

Pemetrexed-induced anaphylaxis

BINAY KUMAR SHAH & YVONNE HEWETT

St. Joseph Regional Cancer Center, Lewiston, Idaho, USA

To the Editor,

Pemetrexed is a folate antimetabolite approved for the treatment of mesothelioma and locally advanced or metastatic non-squamous non-small cell lung cancer [1]. It is generally well-tolerated, with myelosuppression as the most common dose-limiting toxicity. Rare serious side effects of anticancer drugs may be identified during postmarketing experience. We report the first case of pemetrexed-induced anaphylaxis.

A 53-year-old female with metastatic adenocarcinoma of the lung on chemotherapy with intravenous pemetrexed 500 mg/m² followed by cisplatin 75 mg/m² every three weeks presented to the office for her sixth cycle of treatment. Besides mild fatigue, patient denied any symptoms. Her home medications included folic acid 1 mg po daily. She was on intramuscular cyanocobalamin 1000 µg every nine weeks. Her baseline vitals showed temperature 99°F, pulse 99/minute, respiratory rate 16/minute, blood pressure 111/75 mm Hg, and O₂ saturation 95% on room air. Blood work showed WBC 4400/µl with 40.3% granulocytes, hemoglobin 13.3 g/dl, and platelet count 191,000/µl. Liver and kidney function were within normal limits. Prior to chemotherapy, the patient received premedication with dexamethasone, ondansetron, and fosaprepitant. Seven minutes into the pemetrexed infusion, the patient suddenly developed nausea, shortness of breath, audible wheezing and flushing. Her blood pressure increased to 149/90 mm Hg, and her heart rate increased to 134/minute, with a respiratory rate of 32/minute. Her O₂ saturation decreased to 88% on room air. The chemotherapy was discontinued. Bolus IV normal saline and oxygen were administered, along with 50 mg diphenhydramine IV followed by 20 mg dexamethasone IV. Over the course of the next hour, the patient's symptoms gradually resolved and she was discharged in a stable condition.

Discussion

Uncommon but serious complications of a new drug are identified during postmarketing experience after a large number of patients are exposed to the drug [2].

Anaphylaxis, an unexpected non-dose-related adverse drug reaction [3], may present with a variety of symptoms or mimic other conditions. Anaphylaxis is a clinical diagnosis. Elevated serum or plasma tryptase levels may also support the diagnosis, but normal levels do not rule it out [4]. In our patient, a serum tryptase level drawn approximately 4.5 hours after the onset of symptoms was 7 ng/mL (normal range 2–10 ng/mL).

To the best of our knowledge, this is the first report of anaphylaxis from pemetrexed. Early recognition of anaphylaxis and appropriate intervention may prevent life-threatening complications or death. Heightened provider awareness for the potential of such serious adverse events is warranted.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

References

- [1] Product Information: ALIMTA(R) IV injection lyophilized powder for solution, pemetrexed IV injection lyophilized powder for solution. Eli Lilly and Company (per FDA), Indianapolis, IN, 2012.
- [2] Ladewski LA, Belknap SM, Nebeker JR, Sartor O, Lyons EA, Kuzel TC, et al. Dissemination of information on potentially fatal adverse drug reactions for cancer drugs from 2000 to 2002: First results from the research on adverse drug events and reports project. *J Clin Oncol* 2003; 21:3859–66.
- [3] Edwards IR, Aronson JK. Adverse drug reactions: Definitions, diagnosis, and management. *Lancet* 2000;356:1255–9.
- [4] Simons FE, Frew AJ, Ansotegui IJ, Bochner BS, Golden DB, Finkelman FD, et al. Risk assessment in anaphylaxis: Current and future approaches. *J Allergy Clin Immunol* 2007;120:S2.