Support Care Cancer (2001) 9:465–466
DOI 10.1007/s005200000232

SHORT COMMUNICATION

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Anticancer chemotherapy in a patient with prior history of acute intermittent porphyria

A case report and review of the literature

Published online: 3 April 2001
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Abstract We describe the case of a patient with a prior history of acute intermittent porphyria (AIP) who needed the administration of anticancer drugs. Our experience with this patient and the limited experience reported in the literature show that it is probably safe to administer some chemotherapeutic agents, but it is important to prevent (or to minimize) the toxicities of these chemotherapeutic agents, as they seem to put the patient at major risk of an AIP crisis. Hematin and supportive treatments were useful treatments in our patient.

Keywords Advanced cancer · Chemotherapy · Acute intermittent porphyria crisis · Supportive treatments

Introduction

Acute intermittent porphyria (AIP) is characterized by periodic crises of abdominal pain, neurological and psychiatric troubles and brownish-red urine. AIP is due to a genetic abnormality leading to a partial deficiency in porphobilinogen deaminase enzyme activity. Medications and infections are factors that can precipitate a crisis by the accumulation of porphyrin precursors.

Case report

We describe the case of a patient with a prior history of AIP (following the consumption of barbiturates) who was treated by anticancer chemotherapy. The patient, a 70-year-old woman, was admitted with a diagnosis of liver metastasis from an adenocarcinoma of unknown origin. She was started on a chemotherapy regimen combining carboplatin (AUC 5) doxorubicin (60 mg/m^2) and cyclophosphamide (500 mg/m^2), supported by tropisetron and alisapride. The early tolerance was good. Nine days after the start of this therapy the patient was hospitalized because of fever (39°C), confusion, and colored urine. The hematological test showed 110 neutrophils/μl, 8 g hemoglobin/dl and 12,000 platelets/μl. The porphyrin precursors in urine had increased (Table 1). Antibiotics (piperacillin, tazobactam), hematin, and transfusions were administered and resulted in rapid recovery, except for the thrombocytopenia. The patient died 5 months later from progressive neoplastic disease.

Discussion

It is unlikely in our patient's case that the administration of chemotherapy itself triggered the porphyric crisis. Indeed, we have found literature reports [3, 4, 5] of eight patients suffering from porphyria who have been treated with anticancer agents (mitomycin C, cyclophosphamide, mitoxantrone, 5-fluorouracil, cytosine arabinoside, doxorubicin, 6-thioguanine, vincristine, procarbazine, methotrexate) without suffering a porphyric crisis. It is important to note that seven of the eight patients were suffering from variegate porphyria. Nevertheless, the chemotherapy toxicities presented by our patient indicate that clinicians must be cautious. As patients suffering from porphyria usually have a low concentration of cytochromes [2], which transforms the doxorubicin and its active metabolite (doxorubinol) into inactive forms [1], it is possible that unusually high concentrations of doxorubicin and doxorubinol accumulated, leading to febrile neutropenia. We speculate that in our patient the porphyric crisis was a consequence of the chemotherapy-induced infectious epi-

Table 1 Porphyrin and its precursors in urine before and after administration of chemotherapeutic agents (*N* normal value)

Day	−1	0	+1	+9	+11	+12	+13
Porphyrin / precursor		Chemo-therapy		Febrile neutropenia and porphyric crisis	Hematin perfusion	Hematin perfusion	
δ-Aminolevulinic acid (N <3.5 mg/g creatinine)	3.5		6.4	4	6.4		4.2
Porphobilinogen (N <1 mg/g creatinine)	2.2		3	3	2		1.5
Uroporphyrin (N <25 μg/g creatinine)	1,040		1,323	2,977	1,920		1,450
Coproporphyrin (N <110 μg/g creatinine)	347		236	420	400		212

sode associated with neutropenia, and we emphasize the importance of supportive measures to prevent the chemotherapy toxicities in patients suffering from AIP.

Acknowledgements The authors would like to thank Mrs. Mireille Delval for secretarial support.

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