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LETTER TO THE EDITOR

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Intravenous pentamidine for *Pneumocystis* pneumonia prophylaxis in children undergoing autologous hematopoietic stem cell transplant

We are writing you with regards to the brief report, "The use of intravenous pentamidine for the prophylaxis of Pneumocystis pneumonia in pediatric patients," published in January 2017.[1]

We would like to share our positive experience with intravenous pentamidine (IVP) in prophylaxis of *Pneumocystis jirovecii* pneumonia (PJP) in pediatric patients undergoing autologous stem cell transplantation (ASCT) during the period of pancytopenia prior to engraftment.

Our hospital is a pediatric referral center for childhood cancer. IVP prophylaxis for PJP in ASCT patients has been used since 2007. We did a retrospective review of our ASCT database to describe our experience on this topic.

Between March 2007 and January 2017, IVP for PJP prophylaxis was used in 92 ASCT carried out in 55 patients (36 male and 19 female). Of the 55 patients, 19 received two to four tandem ASCT as per disease protocol. The main indications for SCT were 39 solid tumors (29 central nervous system tumors, 8 neuroblastomas, and 2 Wilms tumors) and 16 hematological malignancies (12 acute myeloid leukemia, 2 acute lymphoblastic leukemia, and 2 lymphomas). The median age was 4.3 years (range 0.7–18.4). It is of note that six patients (10.9%) were younger than 2 years of age. There is some literature that suggests that infants under 2 years of age receiving prophylaxis with IVP may be at a higher risk of PJP infection than older children.[3]

The IVP dose was 4 mg/kg (maximum 300 mg) infused over 1 hr, every 2–3 weeks. The first dose coincided with the administration of the conditioning for SCT. The mean number of doses received per patient was 4 (range 2–11) for those receiving one ASCT and 6 (range 3–14) for tandem ASCT. The main reason for discontinuing IVP prophylaxis was switching the patients to the first-line treatment with trimethoprim–sulfamethoxazole (TMP–SMX) due to hematologic recovery. In our review, we did not find any breakthrough of PJP.

Only three patients (5.4%) had infusion-related adverse reactions. Two of them were serious reactions (anaphylaxis and seizures), leading to treatment discontinuation. One patient experienced nausea and hypotension that resolved, slowing the infusion rate. The incidence of adverse events was comparable to other published data on safety of IVP prophylaxis.[2–5]

While TMP–SMX remains the gold standard for PJP prophylaxis,[7] bone marrow toxicity is a limiting factor for its use in pediatric patients receiving tandem ASCT, who require adequate hematologic recovery between them. American and European guidelines suggest second-line drugs such as inhaled pentamidine, dapsone, or atovaquone, with limited evidence.[1,6,7] Some practicalities should be considered, related to equipment and facilities that may make using inhaled pentamidine difficult.[2,6]

Our series of ACST pediatric patients treated with IVP is homogeneous in indication and dosage regimen. In our experience, prophylaxis with IVP has proved to be safe, feasible, and effective, with a breakthrough rate of 0. In addition, no toxoplasmosis infections have been reported.

We hope our experience can increase the evidence on the use safety, feasibility, and efficacy of IVP as the second-line PJP prophylaxis when TMP–SMX is not suitable.

Abbreviations: ASCT, autologous stem cell transplant; IVP, intravenous pentamidine; PJP, *Pneumocystis jirovecii* pneumonia; TMP–SMX, trimethoprim–sulfamethoxazole

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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