

Impact of structured personal on-site patient education on low Posaconazole plasma concentrations: a cohort study



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Objectives: Posaconazole (PCZ) is a triazole antifungal agent that has broad activity against pathogenic fungi and is increasingly used for prophylaxis and treatment of invasive mould infections (IMIs). It is currently approved for antifungal prophylaxis in patients with neutropenia after induction therapy for acute myeloid leukaemia (AML) or myelodysplastic syndromes and in patients with acute graft-versus-host diseases (GvHD) after allogeneic haematopoietic stem cell transplantation (HSCT). PCZ is only available as an oral formulation, with varying absorption from the gastrointestinal tract. Low posaconazole plasma concentrations (PPCs) are associated with breakthrough invasive mould infections (IMI) among patients with hematological malignancies. This study evaluates the influence of a structured personal on-site patient education on insufficient PPCs.

Methods: The study was conducted from July 1st to October 31st at the Division of Haematology, Medical University of Graz, Austria. PPCs were measured in all patients with haemato-oncological malignancies receiving the drug prophylactically. The first PPC was measured four days after initiation of posaconazole and then repeated twice weekly (in case of sufficient PPCs once per week). Concentrations above the target of 0.5 mg/L were defined as satisfactory and those below this target as low PPCs. In patients with low drug levels a structured personal on-site education concerning the intake of posaconazole (e.g. intake with fatty and acid food, general importance of sufficient PPCs, reasons for insufficient PPC) was performed (duration 5-10 minutes).

Results: 127 PPCs were measured in 28 patients hospitalized at the Department of Haematology during the study period. Initial PPCs were sufficient in 15 (53.6%) and low in 13 (46.4%) patients. In those 13 patients a personal on-site education was performed. In five of those 13 patients antifungal therapy was changed in clinical routine to another antimycotic drug before a follow-up PPC could be obtained and patients were therefore excluded. In five (62.5%) of the remaining eight patients the structured personal on-site education led to sufficient levels, while in three (37.5%) PPCs remained low after education and posaconazole had therefore to be changed to another antifungal drug. No patient experienced posaconazole side effects and there was no breakthrough invasive fungal infection. All patients except one who died of his underlying disease survived at six weeks.

Conclusion: In patients with low PPCs a structured personal on-site education led to sufficient levels in more than 60% of patients. Therefore structured personal education seems to be a promising tool to increase low PPCs without increasing the dosage.

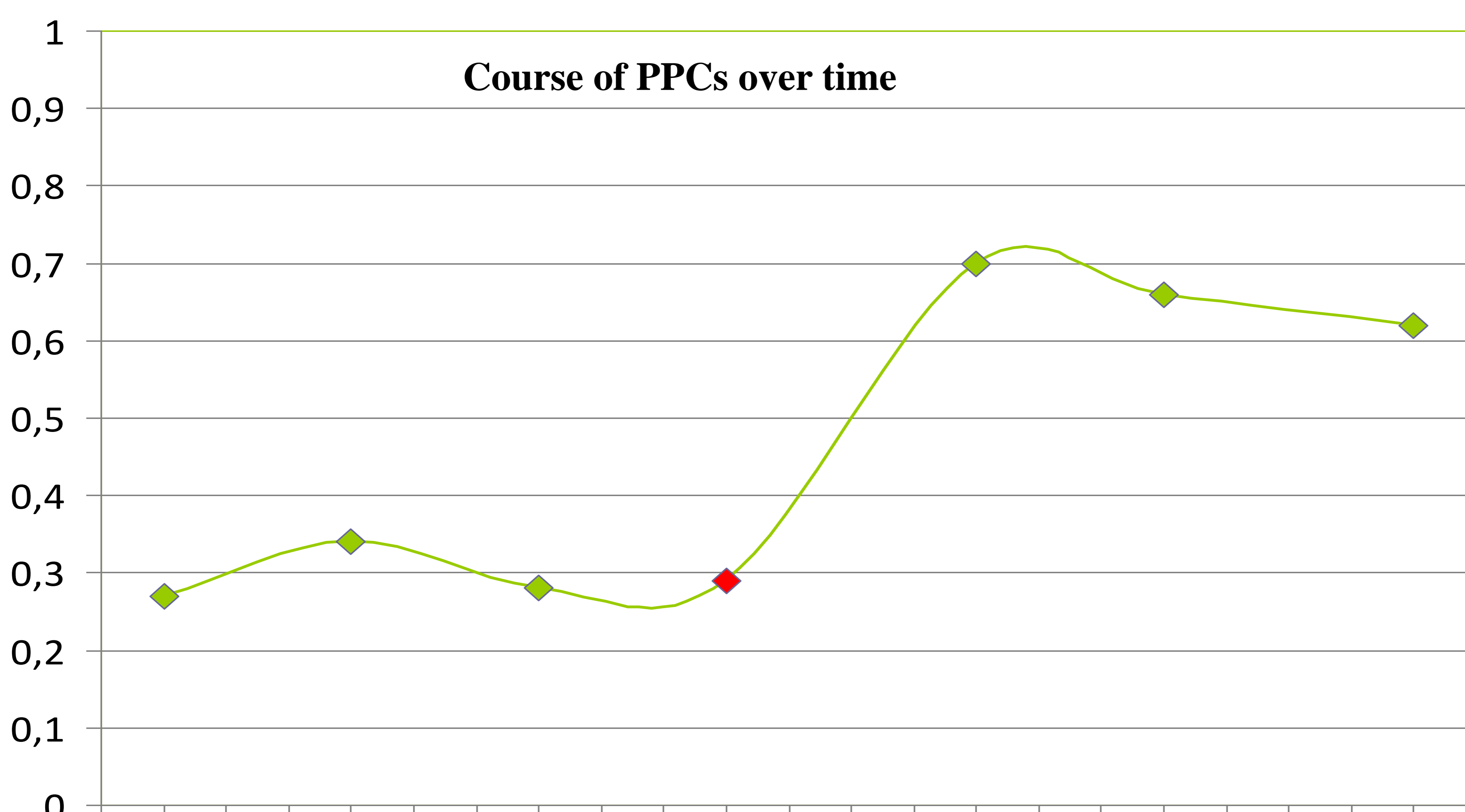


Figure 1: Example for development of PPC's during hospitalization in one patient with prolonged neutropenia after AML induction chemotherapy (the dose remained the same throughout the hospital stay).

The green squares indicate the PPC's. The red square highlights the date of the on-site education of the patient.



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