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Original article

Assessment of high-priced systemic antifungal prescriptions☆

Évaluation des pratiques cliniques de prescription des antifongiques systémiques coûteux

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Abstract

Objectives. – To assess compliance with international guidelines for costly antifungal prescriptions and to compare these results with a first study performed in 2007.

Methods. – Retrospective study including all costly antifungal prescriptions made in surgical and medical intensive care units and in a hepatobiliary, pancreatic, and digestive surgery unit. Prescriptions were assessed in terms of indication, dosage, and antifungal de-escalation.

Results. – Seventy-four treatments were analyzed. Treatments were prescribed for prophylactic (1%), empirical (22%), pre-emptive (16%), or targeted therapy (61%). Caspofungin accounted for 68% of prescriptions, followed by voriconazole (20%) and liposomal amphotericin B (12%). Indication was appropriate in 91%, debatable in 1%, and inappropriate in 8%. Dosage was appropriate in 69%, debatable in 8%, and inappropriate in 23%. Prescriptions were inappropriate for the following reasons: lack of dosage adjustment in light of the hepatic function (10 cases), underdosage or excessive dosage by > 25% of the recommended dose in seven cases. De-escalation to fluconazole was implemented in 40% of patients presenting with a fluconazole-susceptible candidiasis.

Conclusion. – The overall incidence of appropriate use was higher in 2012 compared with 2007 (62% and 37% respectively, $P = 0.004$). Nevertheless, costly antifungal prescriptions need to be optimized in particular for empirical therapy, dosage adjustment, and potential de-escalation to fluconazole.
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Keywords: Aspergillosis; Candidiasis; Antifungal therapy

Résumé

Objectifs. – Évaluer le respect des bonnes pratiques cliniques de prescription d'antifongiques coûteux en conformité avec les recommandations internationales et comparer ces résultats à une première enquête réalisée en 2007.

Méthode. – Étude rétrospective incluant toutes les prescriptions d'antifongiques coûteux dans un service de réanimation médicale, de réanimation chirurgicale et de chirurgie digestive, endocrinienne et hépatique. L'évaluation a porté sur les critères suivants: indication, posologie et désescalade.

Résultats. – Soixante-14 antifongiques coûteux ont été prescrits. Les types de traitements étaient: prophylactiques (1 %), empiriques (22 %), pré-emptifs (16 %) et curatifs (61 %). La caspofungine était prescrite dans 68 % des cas, suivie du voriconazole (20 %) et de l'amphotéricine

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B liposomale (12 %). Les indications étaient appropriées dans 91 % des cas, discutables dans 1 % et inappropriées dans 8 %. La posologie était appropriée dans 69 % des cas, discutable dans 8 % et inappropriée dans 23 %. Les prescriptions ont été jugées inappropriées pour les motifs suivants: absence d'adaptation à la fonction hépatique (10 cas), sous- ou surdosage de plus de 25 % de la posologie recommandée dans 7 cas. La désescalade au fluconazole au cours d'infection à *Candida* fluconazole sensible a été réalisée dans 40 % des cas.

Conclusion. – L'incidence globale des traitements appropriés était supérieure en 2012 comparativement à 2007 (62 % et 37 % respectivement, $p = 0{,}004$). Les prescriptions d'antifongiques coûteux nécessitent d'être optimisées notamment en termes de traitement empirique, d'adaptation de posologie et de désescalade au fluconazole lorsqu'elle est possible.
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Mots clés : Aspergilloses ; Candidoses ; Antifongiques

1. Introduction

Over the last decade, new systemic, mold-active antifungal agents have been developed. Lipid formulations of amphotericin B, newer triazoles, and echinocandins have shown increased efficacy and better tolerance for the treatment of invasive fungal diseases. The availability of these agents has important implications for patient care and several international guidelines have been developed for the treatment of the most common invasive fungal diseases [1–8]. Their use, supported by international guidelines, has dramatically increased over the last decade.

At the same time, healthcare systems are confronted to constant pressure to provide high-quality care with limited financial resources because of cost increase. The increased antifungal consumption led to setting up an action plan to improve the use of high-priced systemic antifungals (Fig. 1). A multidisciplinary approach to combine evidence-based medicine with detailed knowledge of local epidemiology and appropriate clinical, biological, and radiological assessments is the basis of antimicrobial prescribing.

Antimicrobial stewardship programs are based on a multidisciplinary approach and can reduce the inappropriate use of antimicrobials [9]. In 2007, we conducted an audit of antifungal therapy use. Indication and dosage were appropriate in 65% and 62%, respectively [9]. Access to international diagnosis and treatment guidelines have since been provided to all prescribers via our hospital's intranet, case report discussion meetings have been organized, and a multidisciplinary team is meeting on a regular basis to discuss management of invasive fungal disease. In addition, experts in invasive fungal diseases are available for advice all over the hospital.

We undertook a second retrospective assessment of high-priced systemic antifungal agents use in medical and surgical intensive care units and in a high-risk surgery department by comparing antifungal appropriateness rate with our first study performed in 2007.

2. Methods

Our retrospective study was performed with adult patients admitted to the medical intensive care unit (27 beds), surgical intensive care unit (18 beds), and hepatobiliary (including liver transplantation), pancreatic and digestive surgery department (100 beds) at Haute-Pierre University Hospital, Strasbourg, a 1053-bed tertiary care hospital, from May 2012 to July 2012.

A list of all patients aged ≥ 18 years with prescription of a systemic antifungal agent was obtained from the inpatient pharmacy database. All consecutive inpatients, who received a high-priced systemic antifungal agent (liposomal amphotericin B, voriconazole, posaconazole, and caspofungin), were included in the study. Micafungin, anidulafungin, and other lipid formulation of amphotericin B were not available in our hospital at

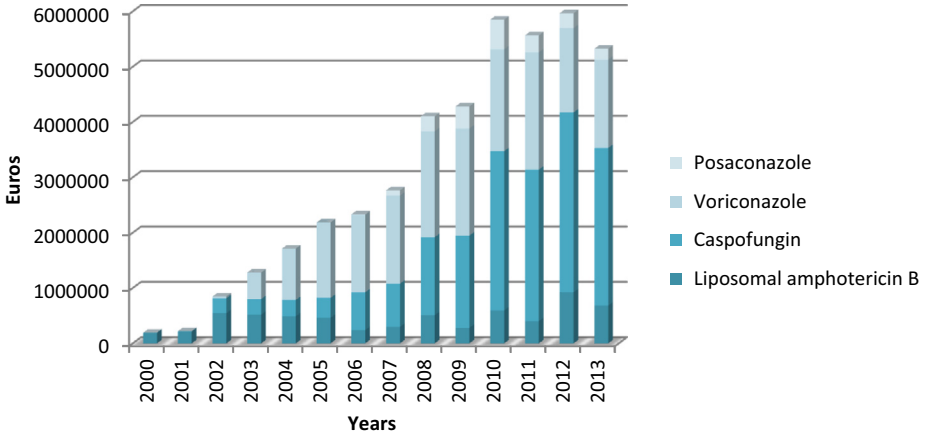

Fig. 1. Annual costly antifungal expenditure since 2000 (University Hospitals of Strasbourg).
Consommation annuelle en € des antifongiques coûteux depuis 2000 (hôpitaux universitaires de Strasbourg).

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