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PREDICTION OF THE CLINICAL OUTCOME IN INVASIVE CANDIDIASIS PATIENTS BASED ON SERUM ANTI-*CANDIDA* ANTIBODY PROFILES

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Invasive candidiasis (IC) remains a leading infectious cause of morbidity and mortality in severely immunocompromised and/or critically ill patients. Unfavorable outcomes of IC could be preventable by early and appropriate implementation of antifungal therapy. However, no reliable clinical or molecular indicators are currently available for predicting the likely clinical outcome in IC patients at presentation. This clinical setting has prompted the search for accurate prognostic biomarkers of IC at an early stage with the intention that therapeutic strategies may be tailored accordingly. The goal of this study was to identify and validate accurate prognostic features in IC patients at presentation by screening of their serum anti-*Candida* IgG antibody profiles. To address this goal, we combined serological proteome analyses with data mining procedures. Two-way hierarchical clustering and principal-component analyses of reactivity patterns of 31 anti-*Candida* IgG antibodies segregated IC patients into two clusters with distinct prognoses. These subgroups were independent of baseline characteristics of the study population. Supervised analysis with cross-validation identified a panel of five anti-*Candida* IgG antibodies as the best prognostic predictor for IC. The robustness of this five IgG antibody set was confirmed using an independent data set. This panel was able to accurately predicting risk of a fatal outcome in IC patients at presentation, and allowed delineation of a high-risk group that may benefit from aggressive antifungal therapy. Multivariate logistic-regression analysis revealed that this five IgG antibody set was an independent clinical-outcome predictor of IC, and further provided additional discriminative power over known prognostic factors for IC. We conclude that IC patients could be stratified according to their prognosis by examining a reasonably small number of predictor variables (IgG antibodies). If our results are confirmed in future larger prospective studies, this new model could be useful in predicting patient outcome for individualized therapy of IC.

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