RESULTS

**Search Results**

We followed the guidelines of PRISMA in the writing of this paper. The search resulted a total of 1,169 articles of which 324 met the eligibility criteria, were reviewed in full and used for data collection. A total of 199 studies including 248 patients were included in the analysis. Most studies included in the analysis were case reports and retrospective reviews. The extracted clinical data is presented in tables 1.

**Overall morbidity and mortality associated with aspergillosis infections**

Of the 248 patients included in this study, 98 died during the duration of their respective studies. Eighteen of those patients expired due to other causes, and 80 expired due to aspergillosis. Overall mortality of patients attributable to aspergillosis in this review was slightly over 32%. (This is consistent with what the literature shows in introduction)

**Morbidity and mortality with and without surgery**

Surgical intervention was utilized in 189 patients to aid in diagnosis or treatment. Surgical intervention for treatment was used in 102 patients of which 19 were partial resections, 36 were complete resections, and in the remaining 47 cases the extent of the resection was not specified (Table 1). A bivariate analysis of patients expiring from aspergillosis after undergoing surgical resection (Table 1) showed a statistically significant (p <.05) increase in survival for patients undergoing surgery (77.5%) than those who did not (61.0%).

**Morbidity and mortality associated with use of various antifungal agents**

Systemic antifungals were utilized in the treatment of 243 patients. The specific antifungals used in this review are listed in Table 1. Patients surviving aspergillosis received a slightly higher number of anti-fungal agents (M = 2.3, SD = 1.2) than those expiring (M = 1.9, SD = 1.0) though this did not reach statistical significance. A bivariate analysis of patients surviving and expiring from aspergillosis following systemic antifungals (Table 1) showed a statistically significant increased survival for patients who were treated with voriconazole (78.3%; p <.001), itraconazole (82.8%; p <.05), and fluconazole (50%; p <.05). Amphotericin B (61.1%) had borderline significance (p =.05), therefore, it was included in further analysis.

**Linear regression results**

Surgical intervention and utilization of systemic fungal agents were investigated in relationship to expiration to identify potential predictors of decreased expiration after treatment for CNS fungal infection. In univariate analysis (Table 2), patients who underwent surgery or received systemic voriconazole or itraconazole were significantly less likely to expire from their infection. There was a 55% reduction in odds of expiration for those treated with surgery (OR = .45, 95% CI 0.25-0.80, p <0.01).The odds of expiration after treatment with systemic voriconazole and itraconazole were reduced by 68% and 64% respectively (OR =0.32,95% CI 0.18-0.55, p = <0.001; OR=0.36, 95% CI 0.16-0.72, p <0.01.. On univariable analysis, fluconazole with associated with a increased odds of expiration (OR = 2.31, 95% CI 1.01 – 5.30, p<.05) though this was not significant on multivariable analysis (OR = 1.33, 95% CI 0.44-4.06, p = .62).

In multivariable analysis (Table 2), the odds of expiration with surgery were independently reduced by 60% (OR = 0.40,95%CI 0.21-0.75, p < 0.01). The odds of expiration after receiving voriconazole and itraconazole were independently reduced by 86% and 85%, respectively (OR = 0.14, 95% CI 0.05-0.36, p < 0.001; OR = 0.15, 95% CI 0.05-0.38, p <0.001.