Systemic Candidiasis in Extremely Low Birthweight (ELBW) Neonates Despite the Routine Use of Topical Miconazole Prophylaxis: Trends, Risk Factors and Outcomes over an 11-Year Period

Bhavani Sriram, Pratibha K Agarwal, Nancy WS Tee, Victor S Rajadurai

Abstract

Introduction: This study aims to determine the incidence, trends of systemic candidiasis and meningitis in extremely low birthweight (ELBW) neonates (<1000 gms) despite the routine use of topical miconazole prophylaxis and to compare the risk factors, adverse outcomes and comorbidities with controls. Materials and Methods: Retrospective cohort study of ELBW neonates with systemic candidiasis and meningitis over an 11-year period (1997 to 2007). Matched case control analyses were performed to determine the risk factors and comorbidities which were severe intraventricular haemorrhage (IVH), severe retinopathy of prematurity (ROP), patent ductus arteriosus (PDA) requiring treatment, necrotising enterocolitis (NEC), chronic lung disease (CLD) and cholestatic jaundice. Mortality and end organ involvement secondary to systemic candidiasis were identified as adverse outcomes. Results: Of the 757 ELBW neonates, 51 (6.7%) had evidence of systemic candidiasis with a significant 3-fold increase in trend noted in 2007 as compared against 1997 (12.1% vs 3.8%) (RR 1.2, 95% CI, 1.06 to 1.36, P <0.001). This corresponds to a significant increasing trend of preceding or co-existent bacterial blood stream infections (BSI) in neonates with systemic candidiasis (0% in 1997 vs 7.1% in 2007, RR 1.40, 95% CI, 1.04 to 1.25, P = 0.005). On logistic regression analysis, decreasing gestational age was an independent risk factor for systemic candidiasis (OR 2.0, 95% CI, 1.52 to 2.63, P <0.001). Candida meningitis was detected in 4/38 (10.5%) and end organ involvement in 17 (33%). The organisms isolated were Candida parapsilosis 31 (61%), Candida albicans 17 (33%) and Candida glabrata 3 (5.8%). Significantly higher mortality was seen in cases when compared to controls 10/51 (19.6%) vs 76/706 (10.7%) (OR 2.02, 95% CI, 1.02 to 4.40, P <0.001). Conclusion: Increasing trend in the incidence of systemic candidiasis despite routine use of topical miconazole prophylaxis is of concern and future studies comparing the use of systemic fluconazole versus oral nystatin may need to be considered.

Key words: Antifungal prophylaxis, Extremely preterm, Invasive candidiasis