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Title: Eosinophil-derived neurotoxin in urine may predict the development of bronchopulmonary dysplasia in preterm infants

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Body: Rationale: Bronchopulmonary dysplasia (BPD) is the consequence of disturbed lung development and inflammation due to perinatal factors related to respiratory distress syndrome (RDS). Eosinophil-derived neurotoxin (EDN) is not the only marker of eosinophil activation, but also acts as an alarm protein. Very few studies have examined the potential role of eosinophil in development of BPD. This study aims to address the roles of eosinophil and EDN in the early phase of BPD development. Methods: Study patients were preterm neonates with RDS born at 36 weeks of gestation or lesser (RDS group). Control patients were preterm babies with only minor respiratory problems or none at all. Blood and urine samples were collected to measure total eosinophil count in the blood, serum eosinophil cationic protein (ECP), serum EDN and urinary EDN during the first week of life. Comparisons were made between the RDS group and the non-RDS group and between the BPD group and the non-BPD group. Results: A total of 43 neonates were recruited and 10 patients were excluded. There were no differences between RDS and non-RDS group in total eosinophil count, serum ECP, serum EDN, or urinary EDN, except when compared by gestational age, birth weight, and prenatal dexamethasone use. Urinary EDN was increased significantly in the BPD group compared to the non-BPD group. Conclusion: We demonstrated the roles of eosinophil and EDN in the development of BPD and urinary EDN may be utilized as a non-invasive tool in predicting development of BPD.