Get to know members of the RSF Assembly

Is your research clinical, basic science or translational?

Translational

Tell us about your research?

Neonatal care has drastically improved resulting in survival of extremely premature babies and increased incidence of Bronchopulmonary Dysplasia (BPD) associated comorbidities. Among that, Pulmonary Hypertension (BPD-PH) has high mortality and morbidity. The diagnosis of BPD-PH is difficult since the symptoms overlap with severe BPD. Cardiac catheterization is a highly invasive gold standard procedure for diagnosing PH but is associated with high mortality and morbidity. The main objective of my study is to identify biomarkers for PH which is obtained non-invasively in the tracheal aspirate which would help with early diagnosis and guide management

Where do you see yourself in 5 years?

In 5 years I see myself as an independent clinician scientist with research focus on lung biomarkers in PH associated with BPD. My clinical focus is to be a part of national collaborative and developing a multidisciplinary program in management of severe BPD in extremely premature infants and its severe complications.

What do you find is the major benefit of RSF Assembly Membership?

One of the main benefit of RSF assembly is meeting the leading figures in the field which promotes great opportunity for collaboration. The mentorship I have fostered through this assembly has been invaluable in guiding me through career development and research focus.

Roopa Siddaiah, MD

Assistant Professor of Pediatrics
Division of Pediatric Pulmonology
The Pennsylvania State Hershey Children's Hospital
rsiddaiah@pennstatehealth.psu.edu

Please follow us on Twitter @ATS_RSF **and like our Facebook** **page!**

Roopa Siddaiah, MD

Assistant Professor of Pediatrics
Division of Pediatric Pulmonology
The Pennsylvania State Hershey Children's Hospital,
Hershey PA 17036
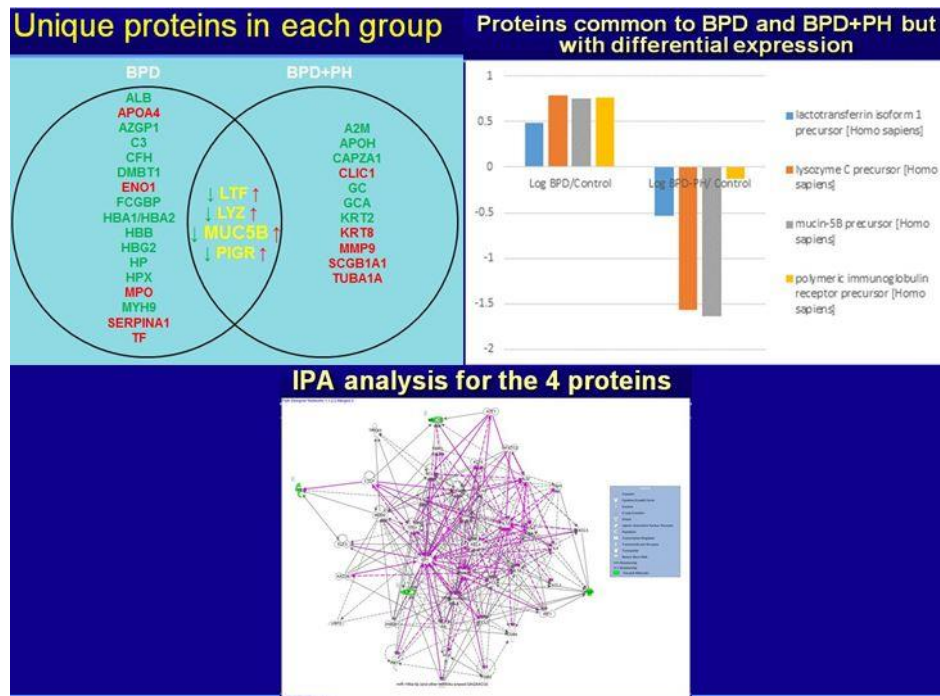
Association of MUC-5B in pulmonary hypertension in preterm babies with Bronchopulmonary dysplasia

Objective: Background: Pulmonary Hypertension (BPD-PH) associated with extreme prematurity has high mortality and morbidity. The diagnosis of BPD-PH is difficult since the symptoms overlap with severe BPD. Cardiac catheterization is a highly invasive gold standard procedure for diagnosing PH. Cardiac catheterization is the gold standard procedure for diagnosis of PH but is an invasive procedure with increased mortality.
Hypothesis: Unique inflammatory biomarkers in tracheal aspirates from preterm babies are associated with BPD-PH.

Methods: We collected tracheal aspirates from a small cohort of infants at the Penn State Children's hospital NICU. Patients with confirmed clinical diagnosis based on NHLBI classification of severe BPD (n=6), BPD-PH (as diagnosed based on echocardiogram findings) (n=6) and term control babies (n=5) were enrolled for the study (Fig 1). Samples were digested; iTRAQ labeled and analyzed via mass spectrometry using ABSciex 5600 Triple TOF and protein identification was accomplished using ProteinPilotTM4.5Beta software. Significantly different proteins in the groups were analyzed with Ingenuity Pathway Analysis (IPA) software (Qiagen).

Results:. Over 700 different proteins were identified using Proteinpilot software. Applying very stringent local false discovery rate estimation; approximately 200-330 proteins were confidently identified in each sample. 22 proteins and 16 proteins were significantly differentially (either under or over expressed) expressed when comparing control vs BPD group and control vs BPD-PH groups respectively. Between these two sets of data, 4 proteins were similar but were differentially expressed namely lysozyme C precursor, lactotransferrin isoform 1 precursor, polymeric immunoglobulin receptor precursor and mucin-5B precursor (MUC-5B) and MUC-5B precursor had the most statistically significant differential log ratio expression. IPA analysis of these 4 proteins showed relevant pathways between NFKB (complex), RELA, CDKN1A, TNF, TP53, PRKCD.

Conclusion: Our pilot project revealed four proteins whose expression was significantly different in severe BPD vs. BPD-PH, and IPA analysis predicted specific underlying inflammatory pathways. Further investigation into these proteins is warranted to explore them as potential biomarkers potential for biomarkers for early diagnosis and target therapies.

Please follow us on Twitter and like our Facebook page!
@ATS_RSF