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Title: Novel proteomic biomarkers in the evaluation of childhood asthma

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Body: Rationale: proteomic markers may be useful in evaluating the severity of childhood asthma. Aim: using proteomic method upon plasma of stable asthmatic children to find asthma related biomarkers. Methods: two dimensional differential gel electrophoresis was used to separate and screen plasma samples of stable asthmatic children (4 groups according to GINA) and healthy controls for differential expression of proteins. The candidate proteins were identified by Matrix-Assisted Laser Desorption/ Ionization Time of Flight Mass Spectrometry, then were validated by ELISA in another large pediatric population. Results: 36 proteins were found differentially expressed between 4 asthmatic groups and healthy control ($p<0.05$), 22 protein spots were identified by Mass Spectrometry which represent 9 proteins. Further validation test showed a panel of 4 biomarkers, antithrombin-III(AT-III), Complement3(C3),CD5antigen-like(CD5L),alpha2-macroglobulin(alpha2-MG),consistently differentially expressed between different groups. AT-III, alpha 2- MG, C3 differentially expressed between asthmatic and healthy control group ($p<0.05$) ; among different asthmatic groups, AT-III expressions showed a trend of rising up with disease severity ($p<0.05$), alpha 2- MG and CD5L showed reversed trends with disease severity ($p<0.05$, $p<0.01$). AT-III had negative correlations with alpha 2- MG, CD5L and FEV1%/FVC%($p<0.05$).CD5L had positive correlations with alpha 2- MG and FEV1%/FVC%($p<0.05$). Conclusions: a panel of 4 biomarkers AT-III, alpha 2- MG, CD5L, C3 relate with childhood asthma disease severity. The combination of which is powerful in evaluating and monitoring childhood asthma progress.