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Impaired function of antibodies to pneumococcal surface protein A and not to capsular polysaccharide in Mexican American adults with type 2 diabetes mellitus

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The goal of the study was to determine baseline protective antibody titers to *Streptococcus pneumoniae* surface protein A (PspA) and capsular polysaccharide in individuals with and without type 2-diabetes mellitus. A total of 561 (131 individuals with diabetes and 491 without), were screened for antibodies to PspA using a standard ELISA assay. Subsets of participants with antibodies to PspA were re-tested using a multiplex ELISA to determine titers of antibodies to capsular polysaccharide (CPS) (4, 6B, 9V, 14, 18C, 19A, 19F, 23F). Functional activity of antibodies was measured by assessing their ability to enhance complement (C3) deposition on pneumococci and promote killing of opsonized pneumococci. Antibody titers to protein antigens (PspA) were significantly lower in diabetes compared to controls without diabetes (p=0.01), and showed significantly reduced complement deposition ability (p=0.02). Both antibody titers and complement deposition were negatively associated with hyperglycemia. Conversely, antibody titers to capsular polysaccharides were either comparable between the two groups or were significantly higher in diabetes as observed for CPS 14 (p=0.05). The plasma specimens from individuals with diabetes also demonstrated a higher opsonophagocytic index against CPS 14. Although we demonstrate comparable protective titers to CPS in individuals with and without diabetes, those with diabetes had lower PspA titers and poor opsonic activity strongly associated with hyperglycemia. These results suggest a link between diabetes and impairment of antibody response.

Biography

Shaper Mirza received her Ph.D. in Microbiology from University of Alabama at Birmingham in 2006. Currently she is an Assistant Professor at the University Of Texas Health Science Center Houston School Of Public Health. She has published over 15 manuscripts in high impact factor journals. Currently she is serving on editorial boards of Epidemiology and Clinical Chemistry and Laboratory Medicine.

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