Omalizumab for the Treatment of Allergic Asthma

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Asthma is a reversible inflammatory condition which affects the conducting airways and leads to variable airflow obstruction. Some individuals have allergic asthma and have increased rates of exacerbations when exposed to particular allergen/s. Many of these allergens are found ubiquitously in the environment and thus are difficult to avoid. Patients with allergic asthma tend to have elevated plasma levels of allergen-specific IgE as a result of chronic exposure to offending allergens. The resultant IgE- antigen complex binds to Fc E receptors on effector cells, which includes mast cells and eosinophils, ultimately causing the release of inflammatory mediators and resultant bronchoconstriction. Omalizumab, a humanized monoclonal antibody approved for use in severe allergic asthma, presents a novel mechanism for the treatment of allergic asthma by binding to IgE at the FcE receptor and in so doing prevents the release of inflammatory mediators from effector cells. It also is capable of reducing expression of FcE receptors on effector cells.

Each year, asthma accounts for numerous hospitalizations, multiple ER visits, frequent PMD visits and missed days from school. Despite high doses of inhaled corticosteroids and long acting beta agonist therapy, a subset of patients with moderate to severe allergic asthma still exhibit break through exacerbations. Omalizumab, as add on therapy, with its unique mechanism of action presents a further opportunity for improved exacerbation prevention. To assess Omalizumab’s efficacy in the pediatric moderate to severe allergic asthma population, a literature search was conducted utilizing PubMed MESH and clinical queries in addition to the Cochrane’s data base utilizing the terms “*Omalizumab in children*”, “*moderate to severe allergic asthma*” and” *asthma exacerbations”.*  Four articles were obtained relevant to the topic. Two articles looked at Omalizumab for the prevention severe asthma in children ages 6-20, while two articles included children and adults ages 6-75. Each study was a randomized, double blinded, and placebo controlled trial. The studies were conducted over a period of a year and the outcome of interest was decreased asthma exacerbations defined as decreased requirement for oral corticosteroids, decreased hospitalizations, decreased unscheduled PMD visits and or decreased days with symptoms. Overall, each study found statistical significant decreased exacerbations favoring Omalizumab over placebo. After careful appraisal of each article the clinical bottom line was that Omalizumab provided decrease rate of exacerbations (hospitalizations) especially in the adolescent age group.

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