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Thank you for entrusting in the compounding services at Madison Medical Compounding Pharmacy to help meet the unique medication needs of your patients. We are excited to share our monthly newsletter with you and look forward to working with you. Please don't hesitate to let us know how we can assist you and your practice.

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Ketotifen – Novel Uses for a Mast Cell Stabilizer

Ketotifen is an oral antiallergic drug developed in 1970 by Sandoz Pharmaceuticals and initially marketed as an inhibitor of anaphylaxis. As a relatively selective, non-competitive H1-antagonist and mast cell stabilizer, ketotifen is used for treating a variety of conditions including asthma, atopic dermatitis, food allergies, allergic rhinitis, mast cell activation syndrome (MCAS), and more. In multiple studies, oral ketotifen has been shown to be superior to other antihistamines for treating MCAS, and recently has been prescribed for MCAS related to chronic inflammatory response syndrome (CIRS).

Most studies published on the use of ketotifen have focused on its benefits in childhood and adult asthma. However, by inhibiting the release of proinflammatory mediators, ketotifen can prevent the vascular permeability changes that are involved in the development of wheal and flare responses. Thus, it can be used in the management of urticaria (hives). Several studies have been published evaluating the use of ketotifen for the management of urticarial syndromes, including cold-induced urticaria, heat-induced urticaria, exercise-induced urticaria, pressure-induced urticaria, cholinergic urticaria, and chronic idiopathic urticaria.

A review of clintrials.gov shows evaluations of ketotifen by oral administration for fibromyalgia, atopic dermatitis, attenuation of reactions during peanut desensitization, allergic rhinitis, asthma, and post-traumatic joint contractures. For adults and older children with asthma or allergic disease, the recommended dose of ketotifen is 1 mg twice daily. For young children 6 months to 3 years old, the recommended dose is 0.5 mg twice daily.

Oral ketotifen is usually well tolerated, with the most frequent side effect being sedation in approximately 10% to 20% of patients, especially at higher doses, but sedation typically decreases within 1 to 2 weeks of use. Less common adverse reactions include dizziness, dry

mouth, nausea, and headache, which have been reported in 1% to 2% of patients at initiation of therapy. However, these side effects do not persist in patients on long-term treatment. Weight gain and central nervous stimulation also have been reported in a small number of patients. Ketotifen may potentiate the effects of central nervous system depressants, antihistamines, and alcohol. Concomitant use of oral ketotifen with oral diabetic agents, such as glyburide and metformin, may result in reversible thrombocytopenia.

The oral tablet form of ketotifen is commercially available in Canada, Europe, and Mexico, but oral, nasal, and topical ketotifen is only available in the United States by prescription through compounding pharmacies, An over-the-counter ophthalmic solution is approved in the United States to treat allergic conjunctivitis.

Stabilizing Mast Cells to Relieve Post-COVID Syndrome?

Regardless of the severity of SARS-CoV-2 disease (COVID-19), a high proportion of patients struggle with persistent respiratory or systemic symptoms after recovery. "Post-COVID syndrome" includes dyspnea, chest pain, generalized fatigue and joint pain, and pulmonary fibrosis is one of the causes. Besides T-lymphocytes and macrophages, mast cells also contribute to the development of cytokine storm and thus stimulate the activity of fibroblasts which directly facilitate the progression of pulmonary fibrosis. Due to its ability to stabilize mast cells, ketotifen may be useful in the treatment of post-COVID-19 pulmonary fibrosis and in relieving the symptoms of post-COVID syndrome.

Calming Mast Cells with Ketotifen: A Potential Strategy for Multiple Sclerosis Therapy?

Multiple sclerosis (MS) is a chronic autoimmune disease of the central nervous system (CNS) characterized by extensive inflammation, demyelination, axonal loss and gliosis. Evidence indicates that mast cells contribute to immunopathogenesis of both MS and experimental autoimmune encephalomyelitis (EAE), which is the most employed animal model to study this disease. Considering the inflammatory potential of mast cells, their presence at the CNS and their stabilization by certain drugs, the effect of ketotifen fumarate on EAE development was studied in mice. Early intervention with ketotifen significantly reduced disease prevalence and severity. The protective effect was concomitant with less NLRP3 inflammasome activation, rebalanced oxidative stress, and reduced T cell infiltration at the CNS. Ketotifen administration decreased the local expression of enzymes that are typically produced by mast cells. Evaluation of the CNS-barrier permeability indicated that ketotifen clearly restored the permeability levels of this barrier. Based on the concept that mast cells are particularly relevant in MS immunopathogenesis, ketotifen as a known stabilizer of mast cell activity has the potential to be used in MS control.

Ketotifen: Treating Irritable Bowel Syndrome with Diarrhea

A study investigated the use of ketotifen for the treatment of irritable bowel syndrome with diarrhea (IBS-D). A total of 108 IBS-D patients were randomly divided into a ketotifen group (n = 55) and a control (placebo) group (n = 53).

The patients in the ketotifen group received ketotifen 1 mg oral tablets two times daily; patients in the control group received oral placebo. Before and after 8 weeks of treatment, gastrointestinal symptoms, anorectal sensory function and the number and activity status of mast cells were assessed for both groups. The overall effective rate of gastrointestinal symptom improvement in the ketotifen group was significantly higher than that in the control group (76.4 vs. 37.7%). First sensation, defecation urgency and discomfort/pain threshold in the ketotifen group improved significantly after treatment; no significant changes were observed in the control group. Six patients (10.9%) in the ketotifen group experienced drowsiness and fatigue, but the symptoms disappeared after 1 week of treatment.

Ketotifen significantly alleviated gastrointestinal symptoms and improved visceral hypersensitivity in patients with IBS-D. The therapeutic effect of ketotifen is related to a reduced number and decreased activity of mast cells in the intestinal mucosa, especially in the terminal ileum.

Ketotifen and Budesonide Nasal Spray for Treatment of Allergic Rhinitis

A total of 96 allergic rhinitis patients were treated with ketotifen fumarate and budesonide administered as a combination nasal spray. Results indicated that the combination of these two drugs can rapidly relieve allergic symptoms. After treatment, the symptoms of nasal obstruction, nasal itching, sneezing, and runny nose significantly improved, and the score of these symptoms was significantly lower when compared to that before treatment.

Physicians and other licensed providers in the USA can prescribe oral, nasal, or topical ketotifen to be prepared by our professional compounding pharmacy. Please contact our pharmacist with any questions.

References:

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