keenova™

Mallinckrodt to Present New Data from two Studies on Acthar® Gel (Repository Corticotropin Injection) Therapy in Multiple Sclerosis (MS) Relapse at Fifth Annual ACTRIMS Forum 2020

February 27, 2020

-- Data highlights include prospective observational registry top-line results and interim baseline patient characteristics at 50 percent enrollment from randomized, double-blind, placebo-controlled OPTIONS study of Acthar Gel in MS relapse --

STAINES-UPON-THAMES, United Kingdom, Feb. 27, 2020 /PRNewswire/ -- Mallinckrodt plc (NYSE: MNK), a global biopharmaceutical company, announced today that it will present new data from two studies of Acthar® Gel (repository corticotropin injection) in multiple sclerosis (MS) relapse. The data will be highlighted in poster presentations at the Fifth Annual Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Forum 2020, held Feb. 27-29 in West Palm Beach, Florida.

"These studies underscore our commitment to patients with difficult-to-treat MS relapse who continue to have symptoms and disease exacerbations that don't resolve with standard therapy," said **Tunde Otulana, M.D., Senior Vice President and Chief Medical Officer at Mallinckrodt.** "We look forward to sharing data in MS relapse from two studies that seek to better understand this patient population and Acthar Gel's potential role in MS relapse."

Acthar Gel is U.S. Food and Drug Administration (FDA)-approved for the treatment of acute exacerbations of MS in adults. Controlled clinical trials have shown Acthar Gel to be effective in speeding the resolution of acute exacerbations of MS. However, there is no evidence that it affects the ultimate outcome or natural history of the disease.[1] Please see Important Safety Information for Acthar Gel below.

These studies are sponsored by Mallinckrodt Pharmaceuticals and include:

Top-line Results of a Prospective Observational Registry of Repository Corticotropin Injection for the Treatment of Multiple Sclerosis Relapse[2]

- The multicenter, prospective, observational registry sought to characterize the adult patient population (≥18 years of age) being treated with Acthar Gel for acute MS relapse and describe treatment patterns, MS exacerbation recovery, and safety outcomes.
- The primary endpoint was: change from baseline to Month 2 as measured by the MS Impact Scale, version 1 (MSIS-29v1) physical subscale score.
- Patients were also assessed with the Expanded Disability Status Scale (EDSS) and Clinical Global Impression of Improvement (CGI-I) scale.
- Patients were followed for up to 24 months, and a minimum of six months at 31 U.S. sites.

Study Design of the Randomized, Double-blind, Placebo-Controlled OPTIONS Study of Repository Corticotropin Injection for Acute Exacerbations of MS[3]

- Interim baseline patient characteristics from 50 percent enrollment (n=32, ≥18 years of age) will be presented.
- The study is an ongoing, randomized, double-blind, placebo-controlled parallel group pilot trial to assess the efficacy and safety of Acthar Gel in patients who continue to experience acute exacerbations of MS after treatment with high-dose intravenous or oral corticosteroids.
- The study's primary objective is to generate an estimate of the response rate for Acthar Gel and to assess its safety and tolerability. The secondary objective is to assess the effect of treatment on quality-of-life measures.
- Find more information about the OPTIONS trial here on the ClinicalTrials.gov website.

About Multiple Sclerosis

MS is a neurologic disorder that affects the central nervous system (i.e., the brain and spinal cord).[4] Symptoms can include fatigue, balance/coordination issues, numbness or tingling, vision problems, muscle spasms, tremors and emotional changes.[5] More than eight in 10 people with MS will experience a relapse, also known as a flare-up, exacerbation or attack, that brings new or worsening symptoms.[5,6]

Acthar Gel (repository corticotropin injection) Indications

Acthar® Gel (repository corticotropin injection) is indicated for:

- Treatment during an exacerbation or as maintenance therapy in selected cases of systemic lupus erythematosus
- Monotherapy for the treatment of infantile spasms in infants and children under 2 years of age
- The treatment of acute exacerbations of multiple sclerosis in adults. Controlled clinical trials have shown Acthar Gel to be effective in speeding the resolution of acute exacerbations of multiple sclerosis. However, there is no evidence that it affects the ultimate outcome or natural history of the disease
- Inducing a diuresis or a remission of proteinuria in nephrotic syndrome without uremia of the idiopathic type or that due to lupus erythematosus
- Treatment during an exacerbation or as maintenance therapy in selected cases of systemic dermatomyositis (polymyositis)
- The treatment of symptomatic sarcoidosis
- Adjunctive therapy for short-term administration (to tide the patient over an acute episode or exacerbation) in: psoriatic arthritis, rheumatoid arthritis, including juvenile rheumatoid arthritis (selected cases may require low-dose maintenance therapy), ankylosing spondylitis
- Treatment of severe acute and chronic allergic and inflammatory processes involving the eye and its adnexa such as: keratitis, iritis, iridocyclitis, diffuse posterior uveitis and choroiditis, optic neuritis, chorioretinitis, anterior segment inflammation

IMPORTANT SAFETY INFORMATION

Contraindications

- Acthar should never be administered intravenously.
- Administration of live or live attenuated vaccines is contraindicated in patients receiving immunosuppressive doses of Acthar.
- Acthar is contraindicated where congenital infections are suspected in infants.
- Acthar is contraindicated in patients with scleroderma, osteoporosis, systemic fungal infections, ocular herpes simplex, recent surgery, history of or the presence of a peptic ulcer, congestive heart failure, uncontrolled hypertension, primary adrenocortical insufficiency, adrenocortical hyperfunction or sensitivity to proteins of porcine origins.

Warnings and Precautions

- The adverse effects of Acthar are related primarily to its steroidogenic effects.
- Acthar may increase susceptibility to new infection or reactivation of latent infections.
- Suppression of the hypothalamic-pituitary-axis (HPA) may occur following prolonged therapy with the potential for adrenal insufficiency after withdrawal of the medication. Adrenal insufficiency may be minimized by tapering of the dose when discontinuing treatment. During recovery of the adrenal gland patients should be protected from the stress (e.g. trauma or surgery) by the use of corticosteroids. Monitor patients for effects of HPA suppression after stopping treatment.
- Cushing's syndrome may occur during therapy but generally resolves after therapy is stopped. Monitor patients for signs and symptoms.
- Acthar can cause elevation of blood pressure, salt and water retention, and hypokalemia. Blood pressure, sodium and potassium levels may need to be monitored.
- Acthar often acts by masking symptoms of other diseases/disorders. Monitor patients carefully during and for a period following discontinuation of therapy.
- Acthar can cause GI bleeding and gastric ulcer. There is also an increased risk for perforation in patients with certain gastrointestinal disorders. Monitor for signs of bleeding.
- Acthar may be associated with central nervous system effects ranging from euphoria, insomnia, irritability, mood swings, personality changes, and severe depression, and psychosis. Existing conditions may be aggravated.
- Patients with comorbid disease may have that disease worsened. Caution should be used when prescribing Acthar in patients with diabetes and myasthenia gravis.
- Prolonged use of Acthar may produce cataracts, glaucoma and secondary ocular infections. Monitor for signs and symptoms.
- Acthar is immunogenic and prolonged administration of Acthar may increase the risk of hypersensitivity reactions. Neutralizing antibodies with chronic administration may lead to loss of endogenous ACTH activity.
- There is an enhanced effect in patients with hypothyroidism and in those with cirrhosis of the liver.
- Long-term use may have negative effects on growth and physical development in children. Monitor pediatric patients.
- Decrease in bone density may occur. Bone density should be monitored for patients on long-term therapy.
- Pregnancy Class C: Acthar has been shown to have an embryocidal effect and should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Adverse Reactions

- Common adverse reactions for Acthar are similar to those of corticosteroids and include fluid retention, alteration in glucose tolerance, elevation in blood pressure, behavioral and mood changes, increased appetite and weight gain.
- Specific adverse reactions reported in IS clinical trials in infants and children under 2 years of age included: infection, hypertension, irritability, Cushingoid symptoms, constipation, diarrhea, vomiting, pyrexia, weight gain, increased appetite, decreased appetite, nasal congestion, acne, rash, and cardiac hypertrophy. Convulsions were also reported, but these may actually be occurring because some IS patients progress to other forms of seizures and IS sometimes mask other seizures, which become visible once the clinical spasms from IS resolve.

Other adverse events reported are included in the full Prescribing Information.

Please see full Prescribing Information for additional Important Safety Information**.**

ABOUT MALLINCKRODT

Mallinckrodt is a global business consisting of multiple wholly owned subsidiaries that develop, manufacture, market and distribute specialty pharmaceutical products and therapies. The company's Specialty Brands reportable segment's areas of focus include autoimmune and rare diseases in specialty areas like neurology, rheumatology, nephrology, pulmonology and ophthalmology; immunotherapy and neonatal respiratory critical care therapies; analgesics and gastrointestinal products. Its Specialty Generics reportable segment includes specialty generic drugs and active pharmaceutical ingredients. To learn more about Mallinckrodt, visit www.mallinckrodt.com.

Mallinckrodt uses its website as a channel of distribution of important company information, such as press releases, investor presentations and other financial information. It also uses its website to expedite public access to time-critical information regarding the company in advance of or in lieu of distributing a press release or a filing with the U.S. Securities and Exchange Commission (SEC) disclosing the same information. Therefore, investors should look to the Investor Relations page of the website for important and time-critical information. Visitors to the website can also register to receive automatic e-mail and other notifications alerting them when new information is made available on the Investor Relations page of the website.

CAUTIONARY STATEMENTS RELATED TO FORWARD-LOOKING STATEMENTS

This release includes forward-looking statements concerning Acthar Gel including expectations with regard to the studies described in this release, as well as its potential impact on patients and anticipated benefits associated with its use. The statements are based on assumptions about many important factors, including the following, which could cause actual results to differ materially from those in the forward-looking statements: satisfaction of regulatory and other requirements; actions of regulatory bodies and other governmental authorities; changes in laws and regulations; issues with product quality, manufacturing or supply, or patient safety issues; and other risks identified and described in more detail in the "Risk Factors" section of Mallinckrodt's most recent Annual Report on Form 10-K and other filings with the SEC, all of which are available on its website. The forward-looking statements made herein speak only as of the date hereof and Mallinckrodt does not assume any obligation to update or revise any forward-looking statement, whether as a result of new information, future events and developments or otherwise, except as required by law.

CONTACTS
For Trade Media Inquiries
Caren Begun
Green Room Communications
201-396-8551
caren@greenroompr.com

For Financial/Dailies Media Inquiries
Jim Heins
H+K Strategies
212-885-0463
jim.heins@hkstrategies.com

Investor Relations
Daniel J. Speciale, CPA
Vice President, Investor Relations and IRO
314-654-3638
daniel.speciale@mnk.com

References

[1] Acthar® Gel (repository corticotropin injection) [prescribing information]. Mallinckrodt ARD LLC.

[2] Data on file. Mallinckrodt ARD, LLC, 2020. Kaplan J, Miller T, Baker M, Due B, Zhao E. Topline results of a prospective observational registry of repository corticotropin injection for the treatment of multiple sclerosis relapse. Poster to be presented at: The fifth annual Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Forum 2020; February 27-29, 2020; West Palm Beach, FL.

[3] Data on file. Mallinckrodt ARD, LLC, 2020. Goldstick L, Miller A, Due B, Bauer W, Zhao E, Cohen J, Robertson D, Wynn D. Study design of the randomized, double blind, placebo-controlled options study of repository corticotropin injection for acute exacerbations of RRMS. Poster to be presented at: The fifth annual Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Forum 2020; February 27-29, 2020; West Palm Beach, FL.

[4] Willis BMJ Best Practice Multiple Sclerosis. October 2018. p. 4.

[5] Multiple Sclerosis: Hope Through Research. National Institute of Neurological Disorders and Stroke. 2012. Available at https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Hope-Through-Research/Multiple-Sclerosis-Hope-Through-Research#3215_29. Accessed February 13, 2020.

[6] Tillery EE, Clements JN, Howard Z. What's new in multiple sclerosis? The Mental Health Clinician. 2017; 7(5) 213-220.

View original content to download multimedia:http://www.prnewswire.com/news-releases/mallinckrodt-to-present-new-data-from-two-studies-on-acthar-gel-repository-corticotropin-injection-therapy-in-multiple-sclerosis-ms-relapse-at-fifth-annual-actrims-forum-2020-301012267.html

SOURCE Mallinckrodt Pharmaceuticals