Effectiveness of Montelukast against Exuberant Immune Activation in “Long Covid”

Francisco Mera Cordero^{1*}, Betlem Salvador González², Rosa Morros³, Sara Bonet Monne⁴, Francesc Xavier Cos⁵ and Jesus Almeda Ortega⁶

¹Sant Feliu de Llobregat Primary Health Care Centre, Direcció d'Atenció Primària Costa de Ponent, Institut Català de la Salut, Spain

²Direcció d'Atenció Primària Costa de Ponent, Institut Català de la Salut Fundació Institut Universitari per a la recerca a l'Atenció Primària de Salut Jordi Gol i Gurina (IDIAPJGol), Spain

³Fundació Institut Universitari per a la recerca a l'Atenció Primària de Salut Jordi Gol i Gurina (IDIAPJGol), Barcelona, Spain. Institut Català de la Salut, Spain

⁴Servei d'Atenció Primària Baix Llobregat Centre Institut Català de la Salut Barcelona, Spain

⁵Innovation office. Institut Català de la Salut, Barcelona, Spain; Foundation University Institute for Primary Health Care Research Jordi Gol i Gurina (IDIAPJGol), Barcelona, Spain; Sant Martí de Provençals Primary Health Care centre, Gerència territorial Barcelona Ciutat, Institut Català de la Salut, Barcelona, Spain

⁶Directorate of Primary Care Costa de Ponent, Catalan Institute of Health Foundation University Institute for Research in Primary Health Care Jordi Gol i Gurina (IDIAPJGol), Barcelona, Spain

***Corresponding author:** Francisco Mera Cordero, Sant Feliu de Llobregat Primary Health Care Centre, Direcció d'Atenció Primària Costa de Ponent, Institut Català de la Salut, Spain

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ABSTRACT

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Introduction

As the number of cases of COVID-19 increases, so does information regarding the management and evolution of the disease. Recently, a new clinical presentation called “long Covid” has been reported, for patients with symptoms lasting for more than 4 weeks from the onset of the disease. Typically, the symptoms comprise dyspnea, cough, headache, arthralgia, fever, abdominal pain, asthenia and skin manifestations [1]. Covid-19 patients without life-threatening symptoms are usually seen in primary care services, with professionals concerned about the limited understanding of the condition and about offering the best available care to these patients [2]. As well as immune modulatory properties, the drug montelukast has antiviral activity against the ZIKA and dengue viruses [3]. Montelukast can also protect against Influenza A virus induced pneumonia by reducing infection of type-1 alveolar epithelial cells and modulating other proinflammatory mediators [4]. Montelukast blocks the action of leukotrienes C₄, D₄ and E₄ by binding to the CysLT₁ receptor in the lungs and bronchi, thus reducing bronchoconstriction and inflammation [5-7].

The case for using montelukast is based on its anti-inflammatory effect and the activation of the immune system in long term COVID disease. Based on the hypothesis presented, a pilot test was carried out in May 2020. Empirical treatment with montelukast (10 mg / day for 14 days) was started in 12 patients with “long Covid”, all were women's. All patients had symptoms lasting more than one month since the start of the clinical presentation. All of these patients had COVID-19 confirmed by PCR. All patients presented dyspnea as the main symptom, followed by asthenia and headache. Other symptoms were fever, skin rashes, amenorrhea, gastrointestinal symptoms and tachycardia. All participants were informed of the off-label use of the drug and written, or oral informed consent was obtained. The patients were followed up by telephone and assessed using a visual analogical scale from 0 to 100 to evaluate clinical improvement.

All patients showed improvement within few days after treatment and a reduction of dyspnea, chest pain, general malaise, dry cough, and nasal symptoms. All of these patients have already

been able to return to work after weeks of sick leave. To date, the improvement has been sustained. Recently, three reports discussed some clinical benefits and the potential for off-label use of montelukast in patients in the acute phase of COVID-19 [8-10]. A clinical trial is currently on-going [11]. We believe montelukast can also have a beneficial effect on "long Covid". Study E (speranza) -COVID-19 will be a phase III, randomized, double-blind, placebo-controlled clinical trial to evaluate the efficacy of montelukast versus placebo to improve the quality of life associated with respiratory symptoms in patients with persistent symptoms of SARS-CoV-2 infection.

We are confident that the results of this trial will offer a valid therapeutic option for the management of "long Covid".

Conflict of Interest

None.

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Vladimir Sergeevich Grodsky. Biomed J Sci & Tech Res

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