Editorial

Immune Modulation

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Immune response has become one of the key targets for pharmacological therapy. From the simple analysis of the immune response against pathogens up to the more complicated assessment of immune response in cancer treatment, new therapies are required [1-3]. All these complex elements have been analyzed in this number of the journal.

For years, the analysis of mediators, signal transduction pathways, and receptors have been recognized as essential elements of the immune response. However, most of the possible therapeutic targets were underestimated since most of the effort in development new therapies has to be devoted to the known traditional key points of the different diseases. Most probably, the unsolved issues in chronic inflammation as well as decreased response to cancer therapy has pushed the field to look for other possible target or new approaches. Thus, new and fast developments in field are been published constantly. One of the most published developments were to target inhibitory receptor in cancer [2,3].

This number of the journal can be divided by three different segments. One of the segments is related to macrophages and antigen presenting cells. In the first article, Bosco and co workers [4], analyze the triggering receptor expressed on myeloid cells (TREM)-1 for potential therapeutic target in infectious diseases and cancer. Modulation of innate immune response could then be considered an important target for immune modulation from the actual process of pathogen or anomalous cell recognition up to development of a specific, highly efficient, adaptive immune response.

In similar fashion, Cerezo-Wallis and Soengas [5] analyze the importance of antigen presentation in cancer and how modulation of antigen presenting cells may be crucial not only for inducing an effective response, but to enhance it and modify inhibitory receptors which would, in turn, generate tolerance.

The model of *Samonella Typhi* is also an interesting model of pathogen which infects macrophages, modulates its survival, and at the same time induces disease [6]. The generation of vaccines has been interesting, but new developments in the field seem to direct attention in non coding RNAs of the pathogen that may alter cell responses, and, at the same point induce modulation of cell response: resolution, tolerance, chronicity?

Asthma and Chronic Pulmonary Respiratory Disease (COPD) are two interesting lung diseases in which the inflammatory response has to be modulated locally and systemically. Genetic models in asthma have been useful identifying the important targets; however, questions still arise concerning patient's response and adherence to therapy [7]. Kanagaratham and Radzioch detailed different phenotypes and the importance of treatments as well as new approaches in asthma form mouse models to humans.

Modified clinical guidelines have been useful in other to ascertain disease stage and evolution, but also if other diseases overlap with the primary disease. Asthma and COPD overlap syndrome, has been defined some years ago based on the fact that old patients with COPD has either characteristics of asthma or they are asthmatic patients whose disease control was not successful, are smokers, and subsequently develop COPD. The therapeutic response of these patients differs from pure asthma or COPD. Consequently, an integrated analysis of this syndrome is crucial in understanding disease and patient outcome [8]. Laucho-Contreras and co workers have analyzed in detail all these points.

Mucosal immune response has been currently analyzed in different diseases. The importance of local, specific therapy may be useful to a number of diseases. Vaccines that are able to enhance local immune response may be effective in preventing several diseases as well as also control the immune response in other diseases as rhinitis, and asthma. Tejera-Alhambra *et al*. [9] analyzed the use of polybacterial vaccines in the clinic, a useful tool for immunologists. The enhancement of immune response in children as well as the induction of an effective immune response is critical in order to prevent several diseases. The approach may be useful in several other applications as the authors' state in their article.

The use of adjuvants and delivery system is critical for vaccine response. A non effective adjuvant can be harmful for the immune response, tolerance or autoimmunity. One of the most interesting adjuvants is ISCOM and ISCOMATRIX which was reviewed by García and Lema [10]. All the different published strategies and future developments are documented in this review which is useful in order to generate new and effective vaccines. The difficult task on vaccine developments in neglected diseases has been documented by the authors.

Finally, two reviews on treatment. One of them refers to the use of immunoglobulins as immunomodulators [11] and the other is the use of a monoclonal antibody for lupus Belilumab [12].

Immunoglobulins have been used as passive immunity in several diseases and it has been shown to be useful from immunodeficiencies up to chronic disease, autoimmunity and even fertility. The change of use of this therapy from conventional intravenous to subcutaneous allows the analysis of different spectra of treatments, simpler and effective. Interesting new discoveries in this area should appear in the near future.

Biological therapy has been used widely in autoimmune disease, inhibitors of cytokines being the most abundant. However, blocking receptors and other signals has also been achieved successfully as documented with belilumab. Other effective therapies are under development and also may be further reviewed in the near future.

In summary the present number of this journal involves several approaches to study, assess and control immune response. This topic is very useful and interesting and it will be extremely useful in the near future.

1381-6128/16 $58.00+.00

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