

## Press release

## Personalised treatment for asthma

Thanks to the tests with biomarkers it is possible to identify the various inflammatory proteins responsible for different types of asthma. In the future only a blood test will be necessary for receiving personalised treatment

GENOA, 20 FEBRUARY 2017 - Personalised medicine also represents the future for respiratory diseases. Already today, the experts are able to distinguish different types of asthma, and thanks to innovative tests it is possible to identify which different inflammatory proteins are responsible for the disease, and as a result, which targeted therapies must be administered to each individual patient. This was all confirmed at the first international meeting entitled 'Focus on upper & lower airways disease", held recently in Genoa and promoted by the Fondazione Internazionale Menarini. "Asthma has been a target of personalised medicine ever since we have been able to select patients using the biomarkers", explains Giorgio Walter Canonica, Chairman of the Congress, and Professor of Asthma and Clinical Allergies of the Department of Biomedical Science of the Humanitas University of Rozzano, Milan, and the Department of Internal Medicine of the University of Genoa. "Thanks to the biomarkers it is possible for us to identify the mechanism that provokes the disease in a specific patient. With an accurate diagnosis, personalised medicine can guarantee a number of advantages: the choice of the most effective therapy and the most appropriate inhaler for each patient; the development of a network among qualified reference centres for managing patients with severe asthma; the development of biological drugs as a new therapeutic approach in patients with severe asthma".

There are various diagnostic tests that are able to help in differentiating patients with asthma, some already available and others to be available in the near future. Included among these are the imaging techniques, such as in-vivo optical imaging with near-infrared fluorescent probes for monitoring the inflammation of the pulmonary tissue. In order to evaluate the changes in the pulmonary tissue due to asthma, the researchers have also used micro-computerised tomography. Even a simple blood test can become an extremely effective instrument for guiding the treatment in patients who suffer from asthma, thanks to the eosinophil count. "These are inflammatory cells found in the circulating blood and in various tissues, the quantity of which is related to the intensity of

certain diseases of the lungs and airways, first and foremost, asthma", remarks Canonica. "Therefore, being able to count the eosinophils might help to identify patients with a greater risk of exacerbation of these diseases and subsequent functional deterioration, as well as to administer an ad hoc therapy case by case. The number of eosinophils can easily be acquired from a blood test, which is much less costly than the research that could also be made of the expectorate. Eosinophil cells therefore qualify as a low cost biomarker for these respiratory diseases, capable of discriminating the patients most susceptible to complications, but also of improving the respiratory symptomatology via the administration of personalised therapies, with a positive effect in terms of savings for the national health system".

As far as the therapies are concerned, trials are currently underway with various monoclonal antibodies, the so-called biological drugs, which allow for blocking several mediators responsible for the inflammation in a totally selective manner. The anti-IgE is already available and the anti-interleukin 5 will also soon be available, an inflammatory protein secreted by the cells of the immune system. This is the first of a series of biological drugs that will revolutionise asthma treatment, allowing for pharmacological interventions at various levels on the mechanism that triggers the symptoms of the disease, thus providing the specialist with numerous weapons for administering personalised therapy. "While this drug does in fact give goods results in cases in which the disease mechanism

is supported precisely by this specific molecule, the forthcoming "intelligent" drugs will be those that fight against other molecules involved in other forms of severe asthma, such as interleukin-4 and interleukin-13", adds Canonica. "These are specific drugs capable of turning off the molecular switches responsible for various types of severe asthma: in addition to which, due to being totally similar to human antibodies, these drugs do not give rise to any negative responses in the immune system. Their selective action ensures effectiveness without any significant side effects due to targeting precise causes of the disease. However these causes must be recognised in each patient in order to be able to prescribe the most appropriate drug for each one depending on their specific case". In order to achieve these objectives, the SANI (Severe Asthma Network Italy) has been created, a network of centres of excellence in the treatment of severe asthma located throughout the national territory and selected according to precise requirements defined by the strictest international guidelines, each of which must guarantee the presence of appropriate instrumental resources and clinical-scientific knowledge. The list of these centres can be consulted on the website: http://www.sani-asthma.org.

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