Sarcoidosis surface marker allows new diagnostic approaches

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A team of scientists at the Helmholtz Zentrum München together with colleagues of the Ludwig Maximilians University Munich recently developed a new strategy to determine monocyte subsets involved in diseases. The results published in the journal *Blood* could help facilitating the diagnosis of sarcoidosis and may improve the respective patient management.

Monocytes are white blood cells that are crucial to human immune defense. They are precursor cells of macrophages and dendritic cells and are circulating in the blood until they invade their respective target tissue where they defend the body against exogenous structures. So far, scientist categorized subtypes of monocytes only with regards to the surface markers CD14 and CD16 – however, this might change in the future.

Surface molecule as new marker

In the current study, the team headed by Prof. Loems Ziegler-Heitbrock was able to show that the analysis of an additional marker molecule called slan allows a more precise determination of monocyte subgroups. The results of the researchers show that this classification might also lead to a better understanding of certain diseases.

Targeting sarcoidosis

To this end Dr. Thomas Hofer and Dr. Marion Frankenberger, scientists of the Comprehensive Pneumology Center (CPC) at Helmholtz Zentrum München, analyzed blood samples of patients suffering from sarcoidosis. This disease, which often leads to damage of the patients' lungs, is caused by a strong immune reaction and a concomitant formation of nodules in the tissue. The underlying mechanisms are still unclear but scientists are convinced that monocytes play a critical role. "Our data clearly indicate which subtype of the monocytes is involved in the disease", explains Hofer. "In the patients' blood we found significant numbers of monocytes, which were positive for CD16 and negative for slan." According to Hofer, these cells might play a major role in sarcoidosis.

Also a role in brain disease

Moreover, in further experiments the scientist found that the marker slan might also serve to gain insights into a brain disease: "To test the predictive value of our new diagnostic tool, we also analyzed samples of patients suffering from HDLS, a disease which leads to destruction of neurons of the brain", said Frankenberger. "Our results show that a clearly definable subgroup of monocytes (CD16 positive/slan positive) was almost absent in the blood of these patients. Therefore we presume that these cells are important for normal brain function", explains the Co-author.

"With this novel approach we now have a new diagnostic tool and we expect this to have an impact in many areas of medicine", concludes principle investigator Ziegler-Heitbrock. "In the future we are planning to investigate whether slan might also lead to new insights with regards to other diseases."

More information: T. P. Hofer et al. Characterization of subsets of the CD16-positive monocytes:impact of granulomatous inflammation

and M-CSF-receptor mutation, *Blood* (2015). DOI: 10.1182/blood-2015-06-651331