Personalised treatment of chronic inflammatory diseases did not produce a better effect

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From left to right: Guro L. Goll, consultant physician and postdoc, Silje W. Syversen, consultant physician and postdoc, Kristin K. Jørgensen, consultant

physician and postdoc at Ahus and Espen A. Haavardsholm, professor at Institute of Clinical Medicine and Head of research and innovation at Diakonhjemmet hospital. Credit: Nicolas Tourrenc

It is not necessary to tailor the medication doses to patients, at thestart of treatment, for patients to have a good effect. This is shown by a new Norwegian study led by Professor Espen A. Haavardsholm.

Ulcerative colitis, Chrohn's disease, rheumatoid arthritis, psoriatic arthritis, spondylitis and psoriasis are chronic inflammatory diseases of the intestines, joints and skin. The diseases can cause a lot of pain and ailments, fatigue and low quality of life in patients. The use of biological medicines have in recent years demonstrated to be effective against the diseases and has led to major improvements in the treatment of patients.

However, many patients do not experience as good an effect of the medication as they had hoped. It is therefore important to investigate how the treatment effect can be carried out in the best possible way.

The Norwegian study NOR-DRUM, The NORwegian DRUg Monitoring study, has examined patients who have been treated with the drug Infliximab for these various inflammatory diseases.

"The result shows that personalized treatment, which is based on adjusting the medicine according to the concentration of medicine in the blood, does not give a better result in the patients compared with standard dosage," says Espen A. Haavardsholm.

He is a professor at the Institute of Clinical Medicine and consultant physician at Diakonhjemmet hospital.

It is therefore not necessary to adapt the doses to the patients at the start of the treatment for the treatment to have a good result.

"Patients can thus be confident that they will receive the best treatment when starting Infliximab with standard dosage of the medicine," he explains.

Medicines that reduce disease activity

In chronic inflammatory diseases, the patient has an over-active immune system that attacks the body. The protein TNF-alpha plays an important role in the development of the disease, by promoting inflammatory processes in the body.

Infliximab is a drug that blocks TNF-alpha and suppresses the activity of the immune system. The medicine leads to lower disease activity in the body, less fatigue and pain, and generally better quality of life in patients.

The aim of the NOR-DRUM study has been to compare personalized adaptations of the medicine with treatment with standard doses, which are doses based on the patient's weight.

"There has been a long and extensive debate both nationally and internationally about whether personalized treatment of these drugs provides better treatment than the usual treatment," explains Haavardsholm.

Either standard or personalized dose for 30 weeks

The study followed 400 patients who started treatment with Infliximab. The medicine was administered intravenously into the arm at the hospital

every 2 to 10 weeks. Regular blood samples were taken from the patients to measure the concentration of the medicine in the blood.

The patients were randomly divided into two groups. One group received standard dosage, while the other group had their medicine dose adjusted along the way, based on the level of medicine they had in their blood.

The results showed that the same number of patients in each group achieved a good effect from the medicine. Treatment effect was measured in the proportion of patients with good response and low disease activity after 30 weeks of treatment.

Provides practical consequences for the treatment

This is the first part of the NOR-DRUM study and the first randomized, controlled study in the field. The researchers expect that the results of this study will have practical consequences for the follow-up of patients starting treatment with Infliximab, both nationally and internationally.

"In addition to safety for the patients, therapists now no longer need to follow up the patient with regular measurements of the serum concentration of the medicine and continuous adjustment of the medicine dosage," Haavardsholm explains.

Most patients are treated with drugs like Infliximab for a period of several years. The second part of the study will therefore investigate whether personalized treatment is more effective than standard dosage in continued treatment to keep the diseases under control.

National interdisciplinary collaboration

The study is led by Haavardsholm and Silje W. Syversen, consultant

physician and researcher at Diakonhjemmet hospital. In addition, Professor Jørgen Jahnsen at UiO and Ahus has been part of the steering group for the study.

Haavardsholm points out that NOR-DRUM is a result of good collaboration between several clinical disciplines and institutions.

"A unique interdisciplinary research collaboration between key environments in the three clinical disciplines of gastroenterology, dermatology and rheumatology, in addition to a laboratory environment at Radiumhospitalet OUH with cutting-edge expertise, is behind the establishment and implementation of the NOR-DRUM study," he says.

There has been a major national effort, with patients from every health region and a number of different hospitals.

"As many as 21 hospitals around the country have participated, with patients from every health region. Such a national collaboration is absolutely essential if a small country like Norway is to carry out large clinical studies like this," he adds.

The study is published in the prestigious journal *JAMA*.

More information: Silje Watterdal Syversen et al, Effect of Therapeutic Drug Monitoring vs Standard Therapy During Infliximab Induction on Disease Remission in Patients With Chronic Immune-Mediated Inflammatory Diseases, *JAMA* (2021). DOI: 10.1001/jama.2021.4172

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