

Team uncovers mechanism, and possible treatment, for immune suppression in liver disease

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The mechanism which underlies the susceptibility of liver disease patients to life-threatening infection has been uncovered by Wellcome Trust-funded medical scientists, who have also suggested a possible treatment to reverse immune suppression in these patients.

Liver disease, or [cirrhosis](#), is currently the fifth leading cause of death in the UK. Cirrhosis patients are more than five times more likely to pick up infections in hospital than patients with other chronic conditions, due to reduced immunity which is a well-recognised feature of the disease.

In a study published today in *Nature Medicine*, researchers at UCL propose that the underlying cause of hyper susceptibility to infection in cirrhosis patients is due to the over production of the lipid hormone prostaglandin E2 (PGE2). This hormone prevents white blood cells from ingesting bacteria and killing them.

In the study, 75 blood samples were taken from patients at hospitals including University College Hospital, Royal Free Hospital, Royal London Hospital, St Mary's Hospital and the Hospital Clinic of Barcelona.

Researchers also found that a decreased concentration globular blood protein albumin, which catalyses the inactivation of PGE2 in [liver disease](#) patients was contributing to low immunity.

The authors of the study have therefore suggested that cirrhosis patients should receive albumin infusions to reverse [immune suppression in chronic liver disease](#).

The research was carried out by lead author Professor Derek Gilroy, Wellcome Trust Senior Research Fellow at UCL in collaboration with consultant hepatologist Dr Alistair O'Brien.

Professor Gilroy said: "A defective [innate immune response](#) was first observed in cirrhosis 30 years ago, and infection is most common cause of death in cirrhosis patients. However, the precise factors that cause reduced immunity have up until now been unknown.

"Our research has uncovered a powerful mechanism for immune suppression in cirrhosis patients and also proposes a relatively simple and safe treatment."

Dr O'Brien added: "We have discovered that the immune system of patients with advanced liver disease can be boosted for at least 24 hours by infusing albumin into a vein which reduces PGE2's effects. This safe process is currently given when patients need extra fluid, for example those with kidney damage.

"We propose that albumin be given daily to improve cirrhosis patients' immune systems and therefore prevent infection. We hope that this will save lives and reduce health-care costs and we intend to investigate this in a large scale clinical trial."

The researchers plan to carry out a clinical trial looking at the ability of albumin to reverse immune suppression in [liver cirrhosis](#) starting this summer. The trial is supported by the Wellcome Trust.

More information: Immunosuppression in acutely decompensated

cirrhosis is mediated by prostaglandin E2, *Nature Medicine*,
[dx.doi.org/10.1038/nm.3516](https://doi.org/10.1038/nm.3516)

Provided by Wellcome Trust

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