Breakdown in Gut Barriers to Bacteria May Promote Inflammation and Craving in Alcoholics

Reports new study in Biological Psychiatry

Philadelphia, PA, October 30, 2014 – Bacteria in the gastrointestinal tract fulfill many vital functions and are critical for digestion. Yet, these same bacteria can induce strong inflammatory responses by the immune system if they penetrate the gut and enter the bloodstream.

Although acute inflammation is a natural response to protect the body, chronic or systemic inflammation is linked to numerous disorders and diseases. Prior research has established the involvement of inflammatory processes in the development of psychiatric disorders, including major depression and alcohol dependence, but the origins of such inflammation have remained unclear.

Now, researchers at Université Catholique de Louvain in Belgium, led by senior authors Dr. Philippe de Timary and Dr. Peter Stärkel, have found that inflammatory pathways are stimulated in alcohol-dependent patients by bacteria that escape the gut barrier, which correlated with alcohol craving. They report their findings in the current issue of Biological Psychiatry.

“In this study, we established a link between alcohol consumption, craving and activation of pro-inflammatory cytokines which contribute to a systemic inflammatory status in alcohol-dependent patients,” said Stärkel.

To conduct this work, they recruited 63 actively-drinking alcohol-dependent patients who underwent testing both before and after alcohol detoxification. That data was compared with testing from 14 healthy volunteers.

When patients were exposed to alcohol, the researchers found that the inflammatory response originated from gut-derived bacterial products that crossed the gut barrier, which in turn, activated specific inflammatory pathways in blood mononuclear cells.

Prior to undergoing detoxification, the observed inflammation correlated with both alcohol consumption and alcohol craving among the alcohol-dependent patients. Following detoxification, some, but not all, of the altered inflammatory processes were either partially or fully recovered.

“This establishes a new concept where events having their origin at peripheral sites in the body could modify central brain mechanisms that ultimately influence behaviour in alcohol dependence,” Stärkel explained.

Dr. John Krystal, Editor of Biological Psychiatry, commented, “This study suggests that there may be a link between inflammatory processes that develop when gut barriers to bacteria break down and risk for continued heavy drinking among people with alcohol use disorders. The findings suggest that it might be helpful to protect and restore gut integrity and to reduce inflammation when helping patients recover from alcohol use disorders.”

Stärkel agreed, adding, “The study does not only open new areas for research but also identifies new targets for developing novel treatment and management approaches for alcohol dependence. Targeting the gut-brain axis either at the level of the gut itself or at the level of effector cells such as blood mononuclear cells in order to influence behaviour could become a potential option in the care of alcohol-dependent patients.”

The article is “Role of Inflammatory Pathways, Blood Mononuclear Cells, and Gut-Derived Bacterial Products in Alcohol Dependence” by Sophie Leclercq, Christine De Saeger, Nathalie Delzenne,

---

Notes for editors

Full text of the article is available to credentialed journalists upon request; contact Rhiannon Bugno at +1 214 648 0880 or Biol.Psych@utsouthwestern.edu. Journalists wishing to interview the authors may contact Peter Stärkel at +32 2 7642853 or peter.starkel@uclouvain.be.

The authors’ affiliations, and disclosures of financial and conflicts of interests are available in the article.

John H. Krystal, M.D., is Chairman of the Department of Psychiatry at the Yale University School of Medicine, Chief of Psychiatry at Yale-New Haven Hospital, and a research psychiatrist at the VA Connecticut Healthcare System. His disclosures of financial and conflicts of interests are available here.

About Biological Psychiatry

Biological Psychiatry is the official journal of the Society of Biological Psychiatry, whose purpose is to promote excellence in scientific research and education in fields that investigate the nature, causes, mechanisms and treatments of disorders of thought, emotion, or behavior. In accord with this mission, this peer-reviewed, rapid-publication, international journal publishes both basic and clinical contributions from all disciplines and research areas relevant to the pathophysiology and treatment of major psychiatric disorders.

The journal publishes novel results of original research which represent an important new lead or significant impact on the field, particularly those addressing genetic and environmental risk factors, neural circuitry and neurochemistry, and important new therapeutic approaches. Reviews and commentaries that focus on topics of current research and interest are also encouraged.

Biological Psychiatry is one of the most selective and highly cited journals in the field of psychiatric neuroscience. It is ranked 5th out of 135 Psychiatry titles and 14th out of 251 Neurosciences titles in the Journal Citations Reports® published by Thomson Reuters. The 2013 Impact Factor score for Biological Psychiatry is 9.472.

About Elsevier

Elsevier is a world-leading provider of scientific, technical and medical information products and services. The company works in partnership with the global science and health communities to publish more than 2,000 journals, including The Lancet and Cell, and close to 20,000 book titles, including major reference works from Mosby and Saunders. Elsevier’s online solutions include ScienceDirect, Scopus, Reaxys, MD Consult and Mosby’s Nursing Suite, which enhance the productivity of science and health professionals, and the SciVal suite and MEDai’s Pinpoint Review, which help research and health care institutions deliver better outcomes more cost-effectively.

A global business headquartered in Amsterdam, Elsevier employs 7,000 people worldwide. The company is part of Reed Elsevier Group PLC, a world-leading publisher and information provider, which is jointly owned by Reed Elsevier PLC and Reed Elsevier NV. The ticker symbols are REN (Euronext Amsterdam), REL (London Stock Exchange), RUK and ENL (New York Stock Exchange).

Media contact

Rhiannon Bugno, Editorial Office
+214 648 0880
Biol.Psych@utsouthwestern.edu