Therapy to improve survival in patients with end stage renal disease

Tech ID: 29736 / UC Case 2017-887-0

BRIEF DESCRIPTION

Despite many recent improvements in dialysis treatment, End Stage Renal Disease (ESRD) patients on hemodialysis continue to experience an annual mortality rate of approximately 20%, a rate worse than many cancers. Researchers at UCI have identified an association between increased levels of endocannabinoid (EC) in ESRD patients' serum and decreased risk of death thereby providing a potential therapy to enhance survival times for patients.

SUGGESTED USES

·Therapy provided during dialysis session to prolong survival rates in patients with End Stage Renal Disease

FEATURES/BENEFITS

·This approach elevates 2-arachidonol-sn-glycerol (2-AG) levels in the patient, thereby increasing activity of cannabinoid receptor 1, which will improve survival in patients with ESRD

·Variety of administration routes (oral, intranasal, intravenous, etc.) possible with formulation containing 2-AG in patients with ESRD, however, intravenous administration during dialysis sessions would be convenient for this patient population.

·This therapy targets cachexia (wasting of the body), which is seen in cancer patients and this therapy could be effective in that setting as well.

FULL DESCRIPTION

The prevalence of chronic kidney disease (CKD) in the United States (U.S.) continues to increase with recent projections estimating that approximately 25 million patients have moderate to severe CKD (stage III-V) and more than 450,000 have ESRD requiring renal replacement therapy. Despite the recent improvements in dialysis treatment, EDRD patients on MHD continue to experience an annual mortality rate of approximately 20%. The risk factors responsible for such risk of death have not been identified.

Recent studies have pointed to cachexia (weakness and wasting of the body due to severe illness) and impaired energy metabolism in playing a role in higher risk of mortality in ESRD patients, with 75% of patients displaying cachexia. The mechanism by which cachexia is connected to mortality in ESRD is not completely known but the mechanisms are being elucidated. In this regard, cachexia has also been connected to mortality in other chronic conditions such as advanced heart failure, inflammatory rheumatologic diseases and cancer. Current data suggests that these conditions are associated with inefficient energy metabolism and energy loss which results in loss of body mass (including fat and muscle) and increased rate of complications including mortality. One promising area that has not been fully explored in this regard is the role of endocannabinoid (EC) system in cachexia. The EC system is composed of bioactive lipid-derived mediators (endocannabinoids) that exert their effects through G-protein coupled receptors. This system plays a large role in many systems including adipose tissue and energy regulation.

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OTHER INFORMATION

CATEGORIZED AS

- **Biotechnology**
  - Health
- **Medical**
  - Disease: Kidneys and Genito-Urinary System
  - New Chemical Entities, Drug Leads
  - Therapeutics
- **Veterinary**

Researchers at UCI have discovered a novel connection between the increase in the serum concentrations of one specific EC, 2-arachidonoyl-sn-glycerol (2-AG), and survival in ESRD patients. Serum from a large cohort of patients showed that those with high levels of 2-AG had the best chance for survival, while those with low levels had higher mortality risk. Therefore, UCI scientist propose delivery of 2-AG as a therapeutic treatment for the cachexia to decrease mortality risk. This discovery holds a promise of improving survival in ESRD patients by elevating 2-AG levels in blood.

» Diagnostics

» Therapeutics

RELATED CASES

2017-887-0

STATE OF DEVELOPMENT

Preliminary studies in dogs have shown that infusion of 2-AG appears to be safe and in mouse models of chronic kidney disease, increasing tissue 2-AG levels were found to have beneficial effects on metabolism and renal parameters.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20210267959	09/02/2021	2017-887

RELATED MATERIALS

» Methods of treating renal disease - 01/23/2020

» Circulating Endocannabinoids and Mortality in Hemodialysis Patients. - 01/14/2020

» Serum Endocannabinoid Levels in Patients With End-Stage Renal Disease. - 08/05/2019

» Increased Renal 2-Arachidonoylglycerol Level Is Associated with Improved Renal Function in a Mouse Model of Acute Kidney Injury. - 09/01/2016

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Novel Inhibitors of N-Acylethanolamine-Hydrolyzing Acid Amidase (NAAA)
- Novel Acid Ceramidase Inhibitors for Oncology and Hyperproliferative Skin Disorders

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