Novel Probe to Detect Vascular Inflammation

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Technology description

A novel fluorescence- and radio-labeled probe has been developed to improve the imaging of inflamed vasculature that can aid in the identification of rupture-prone arterial aneurisms and atherosclerosis plaques. It can be used for the non-invasive detection of these serious conditions and for the continued monitoring of disease progression. The probe is specific for folate receptor-beta expressing immune cells newly recruited to sites of active inflammation.

Background:

Aortic aneurysm affects at least 1.1 million patients in the United States. The rupture of these aortic aneurysms causes more than 15,000 deaths annually in the United States alone. Currently, there is a lack of adequate clinical criteria for the identification of at risk patients. Moreover, the only definitive treatment for aortic aneurysm is vascular repair, which is associated with many serious risks; because of this risk, vascular repair is prescribed very judiciously. Thus, there is a need for an accurate method of identifying patients at high risk of aortic aneurysm rupture.

This new method of molecular imaging offers an opportunity to improve patients' risk stratification by detecting pathogenic events preceding aortic aneurysm expansion and rupture. This innovation involves in vivo imaging using the proprietary radio-and fluorescence-labeled peptide that specifically targets only the recently recruited and differentiated macrophages that are present in vulnerable, inflamed aortic vasculature.

Application area

This probe has valuable applications in the fields of cardiology and diagnostic imaging, with the following benefits over the current standard of care:

Advantages

Non-invasive

Highly efficient and site-specific labeling and imaging

Sensitive and accurate in-vivo monitoring of aneurysms

Dual modality labeling for fluorescence imaging and flow cytometry

Labeled peptide is biodegradable - rapid biological clearance, low toxicity

Better patient diagnoses and outcomes

Institution

[University of Texas System](#)

Inventors

[Sina Tavakoli](#)
112006
[Reto Asmis](#)

联系我们

叶先生

电 话：021-65679356
手 机：13414935137
邮 箱：yeyingsheng@zf-ym.com