

Study proposes 'liquid-biopsy-like' alternative to determine cardiometabolic risk in in patients living with obesity

July 25 2024



Credit: Unsplash/CC0 Public Domain

Obesity levels worldwide are rising and therefore, personalized care is becoming paramount. At the same time, scientists believe that not all fat

is the same. Previous studies have shown that measuring levels of visceral adipose tissue (VAT) inflammation gives a good approximation of cardiometabolic risk. However, currently VAT inflammation cannot be measured without invasive surgery.

Now, Ben-Gurion University of the Negev scientists have proposed a "liquid-biopsy-like" alternative to surgery by measuring circulating miRNAs. They found that the combined levels of two or three circulating miRNAs was a good indication of high VAT inflammation.

Their findings were [published](#) in the March issue of *The Journal of Clinical Endocrinology & Metabolism*. They were also presented at the annual conference of the Israeli Association for the Study of Obesity post publication.

The scientists, led by Dr. Isana Veksler-Lublinsky and Prof. Assaf Rudich, used samples donated to an [adipose tissue](#) biobank from 35 people who underwent [bariatric surgery](#) at Soroka University Medical Center. An additional 51 people were used as a validation cohort. Participants were aged 18 to 70 with a BMI of 30 or greater and no known malignancies.

They identified three circulating miRNAs that, taken together, served as a good indicator of VAT inflammation level. miRNAs are short, noncoding RNA molecules that function as negative regulators of gene expression by two main processes that rely on sequence recognition of target messenger RNAs (mRNA): mRNA destabilization and translational inhibition. Adipose tissue, particularly in those who are obese, is thought to produce up to 50% of circulating miRNA.

While one of the circulating miRNAs they focused on by itself did not differentiate well, the molecule in combination with one or two others, did.

"Circulating miRNAs 181b-5p, with either 1306-3p, or 3138 indicated with a high level of accuracy levels of VAT [inflammation](#). It is a first step in personalized medical care for those living with obesity by giving them a better indication of whether their condition imposes a particularly high health risk or not," explains Dr. Veksler-Lublinsky of the Department of Software & Information Systems Engineering. Prof. Rudich is a member of the Department of Clinical Biochemistry and Pharmacology.

Contributing researchers included Nataly Makarenkov (part of her Ph.D. Thesis), Yulia Haim, Uri Yoel, Yair Pincu, Tanya Tarnovscki, Idit F. Liberty, Ivan Kukeev, Lior Baraf, Oleg Dukhno, Oleg Zilber, and Matthias Blüher.

More information: Nataly Makarenkov et al, Circulating miRNAs Detect High vs Low Visceral Adipose Tissue Inflammation in Patients Living With Obesity, *The Journal of Clinical Endocrinology & Metabolism* (2023). [DOI: 10.1210/clinem/dgad550](https://doi.org/10.1210/clinem/dgad550)

Provided by Ben-Gurion University of the Negev

Citation: Study proposes 'liquid-biopsy-like' alternative to determine cardiometabolic risk in in patients living with obesity (2024, July 25) retrieved 26 July 2024 from <https://medicalxpress.com/news/2024-07-liquid-biopsy-alternative-cardiometabolic-patients.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--