How newly identified biomarkers could reveal risk factors for sudden infant death syndrome

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Researchers at UC San Francisco are getting closer to being able to predict sudden infant death syndrome, or SIDS.

In a study appearing in *JAMA Pediatrics*, they have identified signals in the metabolic system of infants who died of SIDS.

More research is needed, but this could one day help to prevent SIDS.

"This study suggests that metabolic factors may play a crucial role in SIDS," said Scott Oltman, MS, an epidemiologist at UCSF and first author of the study. "These patterns could help identify children at higher risk, potentially saving lives in the future."

There may be no single cause of SIDS

Each year about 1,300 infants under the age of 1 die from SIDS, and researchers still aren't sure what causes these unexpected deaths. What they do know is that there are likely multiple factors that play a role, including inadequate prenatal care, smoking and alcohol use during pregnancy, structural racism and air pollution. Male babies have a higher rate of SIDS than girls.

Researchers are turning to biology to look for a cause of SIDS that can be screened for at birth or targeted with medication.

Investigators in this study knew from previous research that the metabolic system—how bodies process and store energy—might play a part in SIDS. They decided to examine the role of the metabolic system more closely, and compare metabolic data taken from infants as part of a routine newborn screening in California. They compared the data of infants who eventually died from SIDS with similar infants who lived.

In the 354 infants who died from SIDS, they found that there were some metabolic biomarkers that may be associated with increased risk. For example, infants with lower levels of C-3 and elevated levels of C-14OH appear to have a higher risk of dying from SIDS. These findings are in

line with previous research that has found an association between enzymes of fatty acid oxidation, like these, and SIDS.

The scientists also found several other biomarkers that--when elevated--seemed to lead to a reduced risk of SIDS.

Investigations into causes of SIDS continue

The research is still preliminary, and the scientists said that it must be validated in additional settings. While this study was conducted using records of infants who had already died, the study authors mentioned that it would be ideal to study infants that are currently alive and follow them as they age.

While the end goal of creating a screening test for SIDS is still distant, the development signals the promise of future breakthroughs in prevention of this devastating syndrome.

"This study is a critical step toward integrating metabolic markers with potential genetic markers and other risk factors to better assess the risk of SIDS in infants," Oltman said.

Next, he and his team plan next to look at other metabolic markers and their genetic counterparts to see if they can identify even more contributing factors to SIDS.

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More information: *JAMA Pediatrics* (2024). jamanetwork.com/journals/jamap … pediatrics.2024.3033

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