Potential association between pre-labor cesarean delivery and childhood leukemia IDed

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A potential correlation between pre-labor cesarean delivery (PLCD) and acute lymphoblastic leukemia (ALL) could offer new targets for cancer prevention research, according to new research from the Masonic Cancer Center, University of Minnesota.

The study is published in the current edition of the journal The *Lancet Haematology*.

Researchers were led by Masonic Cancer Center members Erin Marcotte, Ph.D., assistant professor, and Logan Spector, Ph.D., professor, of the Division of Epidemiology and Clinical Research in the Department of Pediatrics at the University of Minnesota Medical School.

The pooled analysis covered 13 studies, using data from the Childhood Leukemia International Consortium (CLIC). The analysis looked at 33571 subjects overall, including 23351 control subjects and 8655 cases of ALL. The analyses were controlled for a number of outside factors, including breastfeeding, parental education levels, and ethnicity.

After looking most closely at deliveries where the reason for cesarean were available, no link was found between emergency cesareans and ALL or Acute myeloid leukemia (AML). There was also no observed correlation between AML and pre-labor cesarean delivery. However, the

analysis showed a 23% increase in risk of ALL in children born by pre-labor cesarean delivery.

"Our goal was to determine if there was an association between cesarean deliveries and ALL, to identify potential new targets for research into cancer prevention if there is a correlation," said Marcotte. "While the link between overall cesarean delivery and childhood leukemia was not statistically significant, it was notable to find an association between pre-labor cesarean delivery and ALL."

The reason for the increased risk of ALL with pre-labor cesarean delivery is not known. Several mechanisms may be at play, including the stress response in the fetus caused by labor and the colonization of microbiota a newborn experiences during a vaginal delivery that is missed during a cesarean birth.

"The most plausible explanation for the association between ALL and pre-labor cesarean delivery is in the cortisol, or stress-related, mechanism," said Marcotte. "Because ALL is not associated with all cesarean deliveries, it seems less likely the microbiota colonization is a significant factor in this phenomenon. We believe further investigation into this cortisol mechanism link is warranted due to these findings."

Researchers note the strength of association in these findings is comparable to other studies looking at cesarean delivery rates and other childhood outcomes, including Type I diabetes and asthma. They believe further investigation into this study's findings is needed, utilizing more detailed and reliable delivery information.

"This association deserves a closer look to better determine what's behind the link," said Spector. "Cortisol exposure is plausible since similar compounds are used to treat ALL. We also know that some are born with cells that are on the path to becoming leukemia. Thus, our

working hypothesis is that cortisol exposure at birth may eliminate these pre-leukemic cells."

Provided by University of Minnesota