

To contract or not: A key question for the uterine muscles in pregnancy

November 20 2008

During pregnancy, the muscles of the uterus are relatively inactive. A switch to an activated state capable of strong contractions is therefore essential prior to the onset of labor. Kathleen Martin and colleagues, at Dartmouth Medical School, Lebanon, have now provided new insight into the events that prime the uterine muscles for contraction, something that they hope might have implications for the development of therapies for preterm labor (i.e., labor that occurs before 37 weeks of pregnancy), the most serious complication of pregnancy in developed countries.

In the study, when the protein IP on the surface of muscle cells in human uterine tissue strips obtained from pregnant women undergoing Caesarean delivery prior to the onset of natural labor was stimulated by agonist chemicals, it induced the upregulation of proteins involved in muscle contraction.

Further, the same chemicals increased the contraction of these tissue strips in response to the hormone oxytocin. The authors therefore conclude that the molecule that normally binds IP in vivo, prostacyclin, primes the muscles in the human uterus, allowing for strong contractions during labor.

As Michael Taggart, at Newcastle University, United Kingdom, and colleagues discuss in an accompanying commentary, these data might be viewed by many as contentious, because prostacyclin is a smooth muscle relaxant. However, they do provide an explanation for the paradoxical observation that one of the major signaling molecules produced by the

uterus just prior to labor is prostacyclin.

Source: Journal of Clinical Investigation

Citation: To contract or not: A key question for the uterine muscles in pregnancy (2008, November 20) retrieved 3 May 2024 from <https://medicalxpress.com/news/2008-11-key-uterine-muscles-pregnancy.html>

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