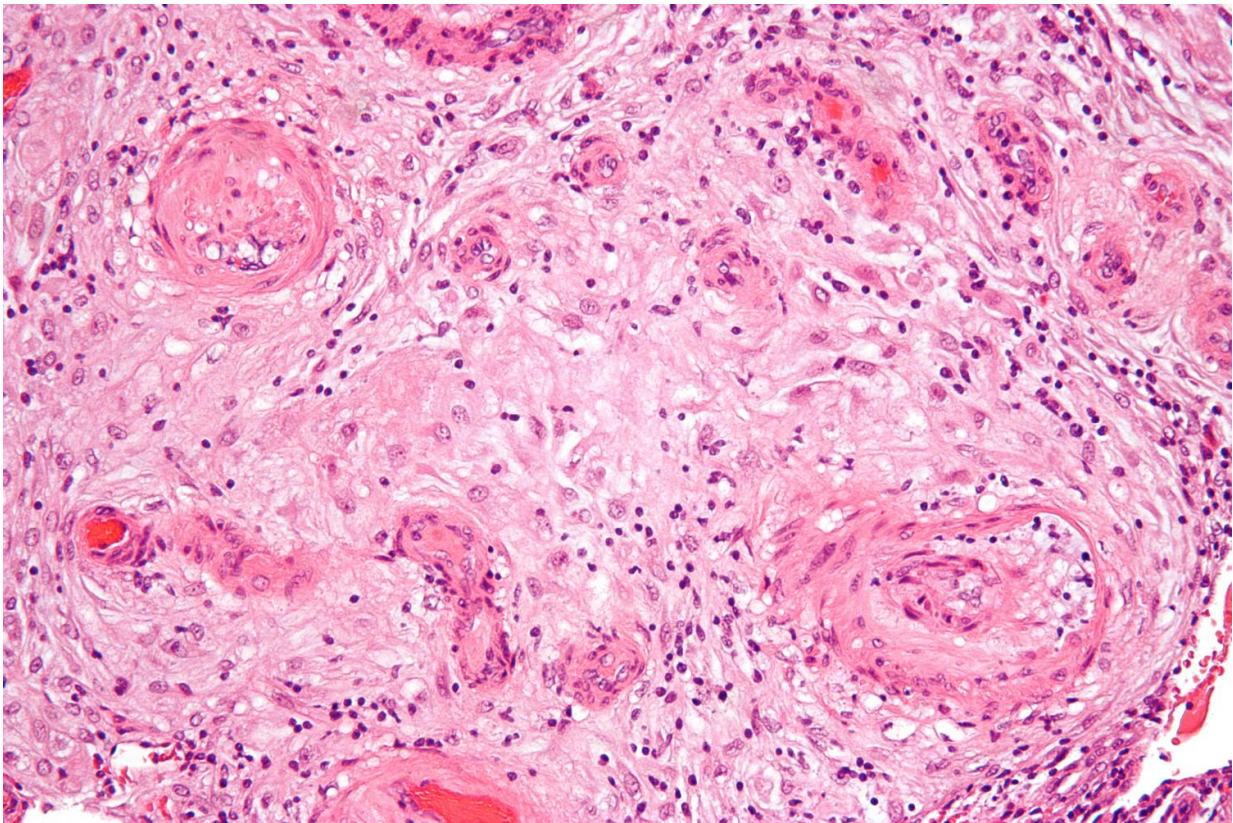


Assessing stem cell therapy potential for treating preeclampsia

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High magnification micrograph of hypertrophic decidual vasculopathy, as seen in pregnancy-induced hypertension. Credit: Wikipedia

Preeclampsia is the leading cause of death and disability, for both mothers and babies, killing approximately 76,000 mothers and 500,000

babies globally every year. Despite this, the only cure at present is to deliver the placenta and the baby, with the potential for long term complications. In recent years stem cell therapies have been investigated in animal models. A review article published in *Current Hypertension Reports* investigates mesenchymal stem/stromal cells (MSCs) as a potential new treatment for preeclampsia.

Senior author, Dr. Lana McClements, from the University of Technology Sydney said that preeclampsia is a pregnancy complication which manifests as a sudden onset of high blood pressure and organ damage, often involving kidneys or liver, in the second half of pregnancy.

"Most of the deaths associated with preeclampsia occur in developing or [low-resource countries](#) however preeclampsia rates in developing countries are increasing due to increase rates of obesity, diabetes and age of women getting pregnant. While there are fewer deaths caused by preeclampsia in developing countries, the economic burden on the healthcare systems is significant," she says.

"In addition, studies show that beyond life-threatening complications in pregnancy preeclampsia is associated with increased maternal and offspring ill health in later life which makes this review important. If stem cell therapies have potential to treat this condition in pregnancy then their application needs to be assessed for [clinical trials](#)," she says.

Dr. McClements and her co-authors from the Mayo Clinic (U.S.); University of Belgrade (Serbia); University of Nis (Serbia), Queen's University Belfast (UK) and Serbian Academy of Sciences and Arts, reviewed the therapeutic potential and mechanisms of MSCs in the context of preeclampsia.

MSCs are the most widely used stem cells for treatment of many

diseases including cardiovascular disease. More recently, a limited number of studies (five) have tested these stem cells, or their associated secreted cargo (vesicles) as novel treatment options for [preeclampsia](#) in pre-clinical (animal) models showing promising results.

The authors say that of particular interest to low-resourced countries are vesicles secreted from these stem cells due to their stability and avoiding the need for expensive GMP cell manufacturing facilities.

"Preeclampsia develops due to a complex set of conditions. Our review shows that there is potential to use stem [cells](#) as therapy but we still don't understand the mechanism by which MSCs might repair damage in the condition.

"Further work is needed to maximize their therapeutic potential and minimise possible side effects before they can be introduced in a [clinical setting](#), this is why we are pursuing this important research in my laboratory at UTS to help treat such a devastating disease," Dr. McClements says.

More information: *Current Hypertension Reports*, [DOI: 10.1007/s11906-020-1034-8](#)

Provided by University of Technology, Sydney

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