



Prof. Anita Arsovska took the time to answer some of the questions addressed during the webinar Q&A that were not answered, due to time restrictions:

1) Does pre-eclampsia independently cause increased lifetime time stroke risk or does the severity of the hypertension that develops during pre-eclampsia play a larger role?

Preeclampsia and the severity of hypertension increase the risk of stroke. Hypertensive disorders of pregnancy affect up to 10% of pregnancies worldwide, which includes the 3%–5% of all pregnancies complicated by preeclampsia. Preeclampsia is a major cause of maternal morbidity and is associated with adverse foetal outcomes including intra-uterine growth restriction, preterm birth, placental abruption, foetal distress, and foetal death in utero. There is also evidence that preeclampsia has long-term adverse effects on the baby, and it is associated with cardiovascular sequelae including hypertension and altered vascular function.

2) What about earlier use of Alteplase within a few days of delivery?

ESO Guidelines on management of stroke in women (2022) currently do not have any available data—even from case reports for less than 10 days after delivery regarding the use of Alteplase in women with stroke. Data from the literature (Akazawa and Nishida, 2017) show that systemic thrombolysis in the early postpartum period may prevent maternal death due to thrombosis, but the risk of severe bleeding is high especially after cesarean delivery.

3) What's the most safe Gadolinium product for pregnant women?

In line with the European Society of Radiology guidelines and based on the available evidence, gadolinium-based contrast agents appear to be safe in pregnancy. Gadolinium use should be considered when the diagnostic study is important for the health of the mother. Data from the literature report that in general, the safest agents are those that are macrocyclic-based.

4) Does that radiation risk also apply to the first trimester?

United States Nuclear Regulation Commission (USNRC) recommends total fetus exposure during pregnancy to be less than 5.0 mSv (500 mrem). The fetus radiation dose below 50 mGy is considered safe and not cause any harm in the first trimester. Radiation exposure to an embryo/fetus may increase the risk, especially at radiation doses > 0.1 Gy, which are well above typical doses received in diagnostic radiology. However, attempting to quantify possible risks from prenatal radiation exposure presents many challenges, especially in the first trimester.

5) How a women with Stroke now pregnant and on oral anticoagulant managed for secondary stroke prevention?

Warfarin is potentially teratogenic and should be avoided, especially between 6 to 12 weeks gestational age. When anticoagulation is considered, low molecular weight heparin (LMWH) is preferred throughout pregnancy. In certain rare situations with very strong indications for warfarin (e.g. women with a mechanical cardiac valve), switching to an alternative to warfarin may be considered as soon as pregnancy is discovered, and could consider restarting warfarin after the twelfth week of pregnancy until closer to delivery. There are insufficient data on the safety of direct oral anticoagulants (DOAC) (apixaban, dabigatran, edoxaban, rivaroxaban) in pregnancy. Switching to LMWH is encouraged as soon as a pregnancy is identified or if pregnancy is planned.

6)How is an intracranial haemorrhage treated/intervened in pregnant vs. non pregnant women?

Pregnancy should not be regarded as a contraindication for angiography and endovascular treatment of a vascular cause for hemorrhage. We should try to avoid/ reduce the risk of fetal injury are reasonable, such as abdominal shielding and judicious exposures.

- for intracerebral hemorrhage, priority should focus on managing blood pressure, and on identifying and correcting coagulopathies. Efforts should be undertaken to reduce blood pressure to an initial target of below 160/110 mmHg, followed by titration of medications to consistently lower than 140/90 mmHg. In pregnancy, first-line medications for blood pressure control are labetalol, methyldopa and long acting nifedipine.
- for cases of unruptured cerebral aneurysm, an MRI without contrast (with time-of-flight MR angiography) is reasonable to define the lesion.If the patient's neurological and overall clinical status is stable, consider deferring treatment until the postpartum period.
- ruptured aneurysm should be treated urgently based on accepted standards of care (coil/clip depending on the availability)
- arterio-venous malformation should be treated based on accepted standards of care.

7) For suspect LVO, do you go to angio suite instead of CTA head and neck to save contrast?

The Expert Consensus Statement from the ESO Guidelines (2022) on management of stroke in women states the following: All members suggest that pregnant women with acute ischaemic stroke and large vessel occlusion, who otherwise meet eligibility criteria, can be treated with MT after appropriate assessment of the benefit/risk profile on an individual basis. A majority of members suggests that in pregnant women with acute ischaemic stroke related to large vessel occlusion, and if MT is available, MT alone should be preferred over IVT or bridging therapy (IVT + MT).

