Intravitreal Anti-Vascular Endothelial Growth Factor (VEGF) Injections in Pregnant Women: A Case Series and Systematic Review

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Background

Management of sight-threatening macular pathology in pregnant women is challenging, and occasionally anti-VEGF agents must be considered.

However, this is controversial: there are theoretical risks from inhibiting VEGF in a growing fetus (e.g. effect on anti-angiogenesis on neurodevelopment) and a resulting lack of data on systemic effects on mother and child. In addition, there are no guidelines or treatment protocols on how to counsel and manage these women.

Aims: To expand the limited evidence base to help inform real world clinical practice.

Methods

Case series: Retrospective case series of all pregnant women treated with intravitreal anti-VEGF injections at the Oxford Eye Hospital between January 2015 to December 2022.

Systematic review: PubMed search conducted on 8 April 2023, with dual screening for eligible cases, then combined in a narrative synthesis.

Data collected: Demographic information; systemic comorbidities (including risk factors for miscarriage); anti-VEGF treatment (indication, drug and dose, no. of injections, gestational age at each injection); complications (pregnancy outcome, obstetric, neonatal); and whether pregnancy status was known at the time of treatment.

Patient Cohort:

42 pregnancies (41 women), including 6 pregnancies (6 women) from our case series.

International scope covering the UK, France, the Netherlands, Spain, Italy, Czech republic, Greece, Iran, Turkey, and Singapore.

Mean 1.7 (SD 1.2) injections given during pregnancy

Mostly unilateral, although 3 women had bilateral injections

Ranibizumab (41%) and Bevacizumab (54%) given more often than Aflibercept (5%).

1. Some women are inadvertently treated without knowledge of their pregnancy, early in the first trimester.

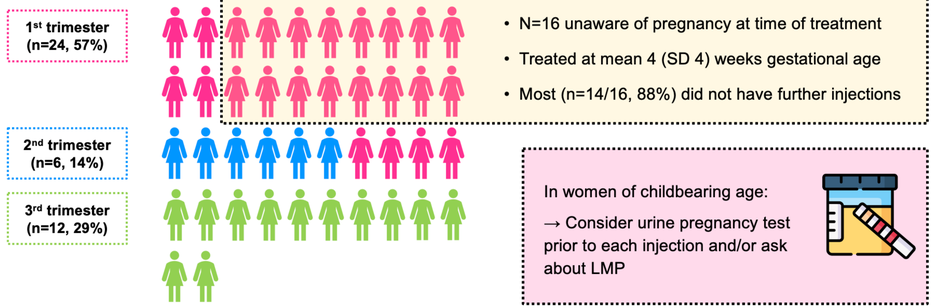


Figure 1: Gestation at treatment initiation

2. Obstetric complications occurred only in those with significant risk factors for adverse pregnancy outcomes, or in the first trimester (confers higher risk of pregnancy loss).

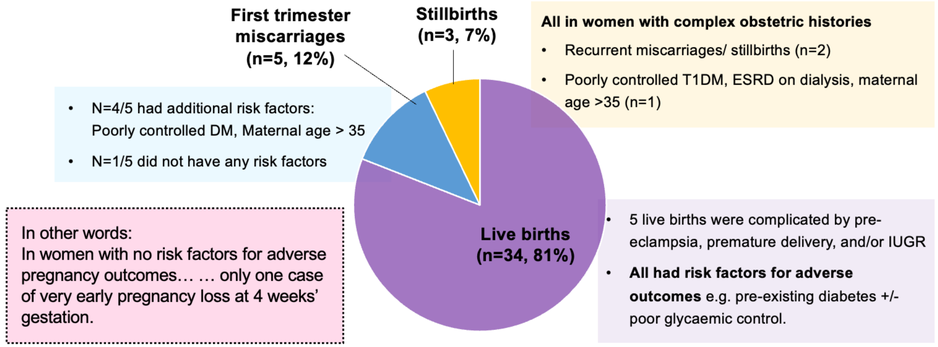


Figure 2: Obstetric complications and pregnancy outcomes in this patient cohort

3. MDT counselling can empower pregnant women to make more informed decisions, appropriate to their own individual circumstances.

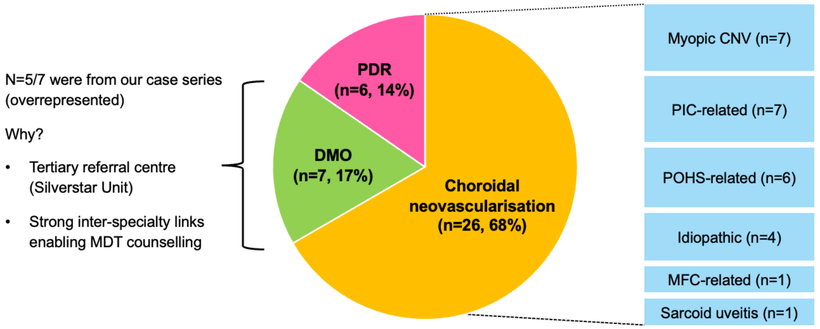


Figure 3: Indications for anti-VEGF treatment in this cohort

Key Messages:

1. Limited data suggests that judicious use of anti-VEGF injections may not necessarily compromising obstetric outcomes.
2. Almost all cases of pregnancy loss were associated with risk factors for adverse pregnancy outcomes, apart from one early pregnancy loss at 4 weeks' gestation with no known risk factors.
3. Treatment protocols for anti-VEGF injections should include negative urinary pregnancy tests in women of childbearing age prior to each injection.
4. Close liaison between ophthalmology and obstetric teams can help facilitate appropriate counselling to enable women to make informed decisions about their treatment.
5. Future prospective work is needed to explore this further

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