Reviewer's report

Title: Placental Determinants of Fetal Growth: Identification of Key Factors in the Insulin-Like Growth Factor and Cytokine Systems using Artificial Neural Networks.

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Reviewer: Claire Levy-Marchal

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This study explored the association between the IGF's and cytokine systems and fetal growth with novel non-linear approaches (supervised neural networks and semantic connectivity maps). Data indicate that both IGF'S and IL-6 protein concentration in placental lysates are able to predict fetal growth restriction.

I am myself aware of the concept of biological supervised networks but I am not familiar with the methodology implies and I would suggest that most the readers would claim the same.

I have therefore a few major methodological questions.

When we refer to standardized regular statistical tests, we all know the limitation and we know how to calculate the sample size to conclude on the data. Here, the population size is very limited (20 and 28) and there is no comment how this sample size may affect the observation.

The authors aim at comparing placentas from AGA newborns and those from Fetal Growth Restriction. However, this small group encompasses not only FGE but also prematurees and this is a very different issue between maturation and fetal growth restriction. The degree of fetal growth restriction is not indicated.

What was the rationale to select the IGF's system and some cytokines and no other hormone involved in fetal growth, such as insulin, cortisol and other … ?

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests