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Letter to editor

The multiple roles of inositol in fertility and newborn outcomes

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To the Editor,

This writing is closely focused on the role of myo-inositol supplementation, an emerging topic under current discussion in Gynaecology and Neonatalogy.

Infertility is defined as the inability to conceive after at least one year of unprotected intercourse, and involves roughly 15% of reproductive-aged couples globally, which makes it a major social problem. Infertility can be caused by sperm defects and, in addition, cryptic sperm defects in apparently normal spermatozoa can be the cause of total fertilisation failure in egg donation cycles (1). Myo-inositol is a molecule that has already been shown to modulate several pathways: inflammatory, metabolic, oxidative and endocrine processes, in various human pathologies, including breast cancer. Studies show how inositol can potentially contribute substantially to a research field, fertility preservation, which has been evolving greatly by harnessing new innovative prognostic and therapeutic techiques (2). Mammographic density is a recognised risk factor for breast cancer, although the causes leading to the proliferation of mammary glandular tissue are still unclear. In a study by Pasta et al, based on seventy-six premenopausal women, the combination of Myo-inositol, Boswellic acid and Betaine significantly reduced breast density, providing novel evidence of a new approach to treating mammographic density (3). The uses of Myo-inositol supplementation are various. During menopausal transition, the combination of myo- inositol plus melatonin seemed to positively influence glucose metabolism, whereas myo-inositol only seemed to improve thyroid function (4). Polycystic ovary syndrome (PCOS) is also among the possible indications for the use of myo-inositol. Such a syndrome entails several repercussions, one of which is certainly infertility, leading to a higher than average demand from these patients for assisted reproductive techniques. Due to the increased exposure to ovarian hyperstimulation syndrome in such patients, it is advisable to freeze oocytes using vitrification techniques in cases of multiple ovarian stimulation (5). Another distinctive trait of PCOS is the frequent predisposition to insulin resistance, which leads to an increased risk of gestational diabetes mellitus (GDM). It has been seen that myo-inositol plus α-lactalbumin supplementation may reduce insulin resistance and excessive fetal growth in pregnancies with gestational diabetes mellitus. Other authors have also evaluated the role of myo-inositol supplementation in pregnancy in terms of benefits to the newborn. In particular, Wei et al, in a meta-analysis based on randomised controlled trials, found that supplementation of 4 grams daily during gestation significantly reduced not only the risk of GDM, but also the number of pre-term births and neonatal hypoglycaemia episodes (6). The benefits of inositol supplementation have also been evaluated with regard to neonatal administration. Indeed, inositol administration in the pre-term neonate with respiratory distress syndrome (RDS) has been shown to be effective: neonatal deaths, infant deaths, retinopathy of prematurity (ROP) stage ≥ 3 and intraventricular hemorrhage (IVH) grade > II were found to be significantly reduced (6). In conclusion, myo-inositol supplementation has numerous benefits in both the gynaecological and neonatological fields that should be known by clinicians.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

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