Letter to Editor

Serum Zinc Levels in Women with Polycystic Ovarian Syndrome Are Lower as Compared to Those without Polycystic Ovarian Syndrome: A Cohort Study

Dear Editor,

In the January–March 2024 issue of your esteemed journal, Dhar *et al*.[1] found that serum zinc (SZ) levels were low amongst Indian patients with polycystic ovary syndrome (PCOS) compared to normal controls. They recommended the evaluation of SZ levels in PCOS patients as it might denote the pivotal role in the pathophysiology of PCOS.[1] We question the study finding and recommendation by the following three points.

First, Dhar *et al*.[1] stated in the study methodology that the SZ values were estimated and interpreted by a fully automated clinical chemistry autoanalyser. It is noteworthy that to evaluate the zinc contribution to a particular disease in a given cohort, there is a need to refer to validated reference values (RVs) for SZ. Indeed, SZ concentrations are controlled by multiple determinants such as age, gender, time of venipuncture, fasting status, serum albumin concentration, health status and anaemia.[2] It is equivocal that the laboratory tool utilised in Dhar *et al*.'s methodology[1] was centred on the above-mentioned determinants of SZ measurement. Reliable age- and gender-specific RV for SZ are recently formulated based on the US National Health and Nutrition Examination Survey data. Following proper sample collection guidelines and assuring analytical precision and accuracy, these RVs could be trustfully moved to routine implementation in other biochemical laboratories with acceptable analytical performance in external quality assurance protocols.[3] This implies that these RVs precisely perform, generate comparable and reproducible findings and define and amend errors to mitigate negative yields or improper diagnoses.[3] We believe that referring to the estimated RV of SZ levels[3] in the study methodology could characterise more accurately the contributory role of SZ in PCOS pathophysiology.

Second, there are a few pre-analytical variables to impact the estimation of SZ levels, namely, blood sample matrix (serum or plasma), blood aspiration site (venous or capillary), blood collecting tube manufacturer, blood processing time (0, 4 or 24 h) and, finally, blood holding temperatures (4°C, 20°C or 37°C). Significant variations in SZ content were found with various tube types, aspiration sites and processing procedures, pointing that these variables could importantly affect SZ estimation and subsequent categorisation of zinc profile.[4] Decreasing these variables is a critical prerequisite for accurate SZ level measurement.

Third, total reflection X-ray fluorescence spectroscopy (TRXFS) is an advanced method to estimate various trace elements, including zinc, in different biological matrices. Evaluation of TRXFS with other methods, such as inductively coupled plasma mass spectrometry and atomic absorption spectroscopy, revealed that it is a viable, better alternative for a more accurate assessment of SZ levels.[5] Incorporating TRXFS in future studies is suggested as it could disclose the actual role of SZ content in the PCOS context.

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Conflicts of interest

There are no conflicts of interest.

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