"Trace Elements, Electrolytes, Minerals and Premenstrual Syndrome" Among Medical Students: The Missing Piece of the Puzzle

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Abstract:

Introduction: Premenstrual syndrome (PMS) is a cyclic phenomenon occurring during the late luteal phase of the menstrual cycle. PMS is characterized by a group of physical, emotional, psychological symptoms of varying severity starting a week before the onset of the menstruation and ends after the onset of menstruation. The aetiology of the premenstrual syndrome remains undetermined. It has been attributed' to vitamin deficiency, hypoglycaemia, antidiuretic hormone, "menotoxin," the renin-angiotensin system, aldosterone, prolactin, and imbalance of ovarian hormones. There is little evidence for any of these hypotheses.

Aim and Objectives: To determine and compare the serum levels of sodium, potassium, calcium, magnesium, iron, vitamin c and uric acid among medical students with and without PMS and to compare the serum levels of calcium, magnesium and iron levels during premenstrual and postmenstrual phases in PMS.

Methods: 5ml fasting venous blood sample was collected under aseptic precautions from all the participants during premenstrual phase and after the onset of menstruation into the plain vial and subjected to centrifugation for serum separation and was used for estimation of serum sodium, potassium, calcium, magnesium, iron, uric acid and vitamin C using fully automated integrated system Vitros 5600. The data was entered into Microsoft excel sheet and the tabulations were done using SPSS 22 version software. Student t test was used for the comparisons between two groups and the pearsons correlation coefficient was used for the correlation.

Conclusion:

- There were significantly decreased sodium, iron, uric acid and vitamin C levels and elevated potassium levels in PMS group as compared to control group measured during premenstrual phase. Determination and supplementation of these electrolytes, minerals and antioxidants in PMS group will have therapeutic potential to decrease the PMS symptoms.
- There were no significant differences in the levels of calcium and magnesium between the control group and PMS group during the premenstrual phase.
- There was significant negative correlation existed between sodium levels and potassium levels. Similarly, there were no significant correlations existed between sodium, uric acid and vitamin c levels.
- The pattern of physical symptoms revealed that 100% subjects presented with abdominal pain, 96.72% backache, 72.13% change in appetite, 67.21% breast sensitivity, 37.71% bloating, 19.67% family history of PMS, 59% irritability, 32% depression and 24% anxiety.

Keywords:

sodium, potassium, iron, calcium, magnesium, uric acid, vitamin c and premenstrual syndrome.