SUMMARY AND CONCLUSION
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- Menstrual cycle pattern results from the biological systems that depend upon a woman's hormonal status and that is sensitive to environment influences. Therefore, factors that disrupt menstruation should be implicit of being capable of disrupting normal reproductive function. Identifying the differences in women's menstrual cycle characteristics and understanding more about the determinant of those differences and their association to other reproductive outcomes yield important insights into women reproductive biology.

- The present study reveals that the ferning (crystallization) pattern of saliva coincides with the female fertile period. The ferning is caused by NaCl which cyclically increases under the influences of estrogen. The ultrasound examination (cumulus like formation) and fern pattern (crystal like structure) during the period of reproductive phases suggest that these parameters can be used to find out the day of ovulation.

- The present observations clearly indicate that increasing level of salivary enzymes (ALP, LDH and Peroxidase) at the midcycle of the normally ovulating woman indirectly proves that the change is due to the enhanced level of estrogen. The concentration of total cholesterol, LDL-C and HDL-C were observed in high quantity during ovulatory phase rather than other phases. The free fatty acids (oleic acid) level was expressed in the mid cycle. The concentration of sodium, potassium and ascorbic acid contain substantial amount in the ovulatory phase, which is due to the augmentation of estrogen surge. Several physiological and biochemical mechanisms, particularly in specific cells and tissues,
ascorbic acid is not involved in follicular development or atresia but in growth and function of luteal cells only. The analysis of salivary glycosaminoglycans (GAGs) and sialic acid show remarkable variation during ovulation. Nevertheless, the available evidence is strongly suggestive that GAGs determination in human saliva is marker for ovulation detection.

- Salivary volatile compounds like 2-nonenal, squalene and aristolochic acid were observed in all the three phases. Among them, 2-nonenal a spike in the concentration of such compounds is indicative of time of ovulation. Cyclic changes in the concentration of this LH like material in saliva fluctuate to prove a biologic role during the normal menstrual cycle. Since LH like material is much higher than in serum, it is possible to speculate the possible existence of receptor proteins in saliva or other concentrating secretory mechanism. The RIA provides significant results that the estrogen and its metabolites (E-1-G) and T4 expressed predominantly only during the mid cycle.

- Salivary glands are metabolically very active. Selective metabolism of amino acids during passage from plasma to saliva contribute to the differences in the relative concentrations of free amino acids in saliva. Our data suggest that in women the salivary amino acids have the potential for estimating short term changes in plasma concentrations, thereby making such investigations less invasive. Tryptophan and arginine possess highest significant in ovulatory phase. Our results indicate that heat shock protein (70 kDa) and von ebener gland protein are (19 kDa) present in the human saliva during ovulatory phase. The 48 kDa protein is predominantly expressed in the
preovulatory and postovulatory phases. Further, the intrinsic properties of 70, 19 kDa (Ovulatory phase) and 48 kDa (postovulatory phase) proteins are ascertained by means of MALDI-TOF/MS. Appearance of Heat shock protein (HSP)-70 kDa in ovulatory phase raises the possibility of relationship of this protein in hormonal surge and exercise of ovulation.

The present results reveal that there is a remarkable cyclic variation in many components during the menstrual cycle. From a clinicochemical point of view, the remarkable cyclic variations are important as a diagnostic aid in the prediction of ovulation.