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Editorial

Pranayama Could be a Therapeutic Tool for Prevention of Hypertension-Development in Pregnancy

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Gestational Hypertension (GH), the hypertension induced by pregnancy, which was earlier known as Pregnancy-Induced Hypertension (PIH) or preeclampsia is defined as hypertension that occurs after 20th week of gestation in an otherwise normotensive pregnant woman.[1] GH occurs in 3-5% of all pregnancies and 30-35% of risk pregnancies, and it accounts for about 12% of maternal deaths in developing countries of south Asia.[1] Though GH usually develops in the later part of pregnancy, often it progresses rapidly and therefore GH patients are generally brought to hospital in advanced stage of the disease that creates difficulty in the management without adequate experience and facilities available for treatment of GH.[2] Recently, GH has been reported to be associated with Cardiovascular (CV) risks during pregnancy and also in the later part of life.[2] Also, there are reports of CV morbidity and mortality during and after pregnancy in pre-eclamptic women.[3]

Although the definite etiology of GH has not yet been ascertained, the disease is characterized by low circulating volume and high vascular resistance due to increased sympathetic tone.[4] We have reported that Sympathovagal Imbalance (SVI) due to both sympathetic overactivity and vagal withdrawal contributes to the genesis of PIH[5] and SVI in PIH is linked to alteration in albumin-globulin ratio.[6] We have also documented that vagal withdrawal is more prominent in early onset category of PIH.[7] We have observed that mild degree of sympathetic overactivity appears in 1st trimester that progresses gradually with the increased gestation of pregnancy in women who develop PIH in the later part of their pregnancy.[7] In these pregnant women, vagal withdrawal becomes prominent prior to the onset of hypertension that contributes to the development SVI and causes GH. Therefore, it was suggested that repeated assessment of autonomic functions, especially in women with risk factors for GH from their early part of pregnancy is required for early diagnosis and prevention of GH.

We have reported that practice of slow breathing exercises and relaxation therapy promotes sympathovagal balance by decreasing sympathetic tone and increasing vagal outflow.[8] There are reports that slow alternate nostril breathing (Anuloma-viloma or nadisodhana pranayama) is effective in achieving autonomic balance and reducing blood pressure.[9] It has also been reported that practice of yoga including pranayamic breathing in pregnancy decreases the incidence of pregnancy related complications and improves pregnancy outcomes.[10] Further, there are reports of decrease in Blood Pressure (BP) in hypertensive patients following practice of slow and alternate breathing exercises.[11] Therefore, this editorial focusses on the effects of anuloma-viloma pranayama on the CV risks and incidence of PIH in women with risk factors for GH.

In a study of ours conducted in 2012-2015, a group of 76 pregnant women having risk factors for PIH were allowed to practice pranayama from 1st trimester of pregnancy. In that group, only 18 subjects developed PIH and 15 were in prehypertensive range, between 36th to 37th week of gestation, whereas in the control group subjects who did not practice pranayama, out of 72 subjects 27 developed PIH and 31 were in the prehypertensive range, between 31st week and 36th week.[12] Thus, in study (pranayama) group, 23.68% developed PIH in later part of 3rd trimester and in control group 37.50% developed PIH in early part of 3rd trimester. Further the degree prediction of Low-Frequency to High-Frequency (LF-HF) ratio of Heart Rate Variability (HRV) to the development of prehypertension or hypertension status was more significant in control group compared to the study group as demonstrated by multivariate logistic regression. Thus, findings of the study indicated that the magnitude of SVI was more in control group and prediction of LF-HF ratio to the development of PIH was more in control subjects who did not practice pranayama, compared to the study group subjects who practiced pranayama, the prediction of hypertension was less. Hence, decrease in LF-HF ratio (Improvement in sympathovagal balance) was directly linked to the decrease in BP status in risk-women who practiced pranayama from the 1st trimester of pregnancy. This study of ours was the report of its first kind on the effects of practice of anuloma-viloma pranayama preventing the development of PIH and CV risk in women having risk factor for PIH.[12]

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In a recently conducted Randomized Controlled Trial (RCT) by us, the women with risk of developing GH recruited from the early part of 2nd trimester before they developed hypertension.[13] The yoga module consisting of asanas and pranayamas that are known to improve pregnancy outcomes was included in the schedule and yoga intervention was imparted for 20 weeks with close monitoring of the compliance of yoga practice. The CV risk parameters including HRV and Baroreflex Sensitivity (BRS) were measured and the contribution of cardiometabolic factors to the endothelial dysfunction was assessed. 20 week yoga practice decreased the incidence of hypertension, improved the fetomaternalneonatal outcomes and reduced the cardiometabolic risks in pregnant women having risk of GH.[13] The findings of the study highlight the potential benefits of yoga practice that mainly includes pranayama in the management of risk pregnancies, especially for women having risk of GH. It is proposed that yoga therapy module that maily includes slow pranayamic breathings should be part of the medical management in the treatment of hypertensive disorders of pregnancy.[13] Also, it was suggested that yoga should be instituted in the early part of pregnancy, especially in high-risk pregnant women for a healthy pregnancy and comfortable delivery.

To conclude, practice of slow pranayamic breathing exercises like anuloma-viloma pranayama from 1st trimester could improve sympathovagal balance, reduce cardiometabolic risks and prevent the development of GH in the later part of pregnancy in women having risk factors for GH. As medications are restricted in pregnancy to avoid side effects of drugs on fetal growth and development, practice of slow pranayama which has no known side effects on fetal development, could be used a therapeutic tool for prevention of development of hypertension in pregnancy, especially in women having high risk for developing GH.

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