INTRODUCTION

The incidence of fetal anomalies is as high as 7.3%\(^1\). Early detection of these anomalies has profound implications on antenatal and intrapartum management of the affected fetuses.

For the past four decades ultrasound had been used extensively to evaluate fetus antenatally. Sonography (USG) is inexpensive, allows real time imaging and is widely available. Smith et al\(^2\) in 1983 first described Magnetic Resonace Imaging (MRI) of women during pregnancy. Initial obstetric application was primarily related to maternal and placental abnormalities. Early investigators suggested maternal sedation by benzodiazepine\(^3\) or fetal paralysis by injecting pancuronium into the fetus directly\(^4\). The advent of faster sequences in 1990s has revolutionized fetal imaging\(^5\)-\(^7\). Since this development, several authors have described their experiences with fetal MRI\(^4\)-\(^10\). When there is doubt on sonography, fetuses are reevaluated after a few weeks or subjected to MRI. Most of the studies used MRI as a supplementary tool after ultrasound. Magnetic Resonance (MR) is non operator dependent, has good soft tissue contrast resolution and no radiation.

MR is being used in second and third trimester. It is not used in first trimester because of the theoretical risk of injury to the growing fetus. So far there is no documentation of any harmful effect of MR on the fetus\(^11\). Most studies have been done with magnets equal to or less than 1.5Tesla. Increased
Signal to Noise Ratio (SNR) is obtained with increased magnetic strength. Fast sequences are employed to overcome fetal motion and sedation is not required. The T2 weighted images are commonly obtained using HASTE, true FISP. T1 weighted images are commonly obtained using GRE based sequences (GRASS, FLASH, Turbo-FLASH). Images can be obtained by these sequences in less than a minute

In some fetuses doubts may persist even after USG and routine MRI. As MR examination is done by ultra fast sequences, subtle abnormalities may still be missed. In mildly dilated ventricles, dilemma persists even after Sonography and Conventional MRI as to whether the dilatation is physiological or pathological. Some conditions like partial agenesis of corpus callosum and schizencephaly are difficult to diagnose on both these modalities.

Quantitative signal intensity measurements can detect even subtle changes on MR images. Signal intensity measurements are obtained by placing Region of interest (ROI) cursors. There is lacunae of work regarding the contribution of MR Signal intensity measurement in diagnosis of fetal anomalies. Hence we undertook this study and evaluated the contribution of MR Signal intensity measurement in diagnosis of fetal central nervous system anomalies

Additionally we tried to interpret the MR images blindly without US data. Many of the previous researchers used MR imaging as an adjunct after
US examination. The radiologist who interpreted the MRI was provided with US findings at the time of MR interpretation. In our study the MR images were read by a radiologist who was blinded to the US data. This radiologist was however informed that the region of interest was (1) head-neck or (2) trunk or (3) both. To our knowledge, we could not find similar study in literature.