COMPARISON OF HEMODYNAMIC RESPONSES DURING AUDITORY STIMULATION BETWEEN LEFT AND RIGHT PLANUM TEMPORALE AND PRIMARY AUDITORY CORTEX USING FUNCTIONAL MAGNETIC RESONANCE IMAGING

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This study is of particular importance for functional Magnetic Resonance Imaging (fMRI) investigations since, it evaluates the asymmetric responses in Primary Auditory Cortex (PAC) and Planum Temporale (PT) due to acoustic noise generated during Magnetic Resonance Imaging (MRI) process. We found that the imaging acoustic noise produced during image acquisition asymmetrically affects left and right PAC and PT. The right PAC showed more activation compared to the left, whereas in the PT, left had higher activity in terms of Hemodynamic Response (HDR) amplitude.

This is an important observation as this asymmetric activation in left and right Region of Interest (ROIs) due to imaging acoustic noise could have effect on how the observed effects can be interpreted. The studies reporting asymmetric responses, especially due to auditory stimuli of imaging acoustic noise may have to factor this effect into their observations for accurate interpretation of their results.

As brain and the auditory cortex in particular do not behave linearly, the asymmetric "baseline" activation due to imaging acoustic noise could limit the effect size due to the stimulus of interest. This effect, therefore, could be incorrectly interpreted as an asymmetric activation due to the stimulus itself. Therefore, we concluded that, it is important to consider the effect of imaging acoustic noise in evaluating the level of activation in different brain areas, particularly in auditory experiments.