

Evaluation of Age and Sex Related Variations of Apparent Diffusion Coefficient (ADC) Values in Corpus Callosum of Brain in Sri Lankan Population

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Aim of this study was to evaluate the age and sex related variations in the Apparent Diffusion Coefficient (ADC) values of corpus callosum of brain in Sri Lankan population. This quantitative cross sectional study was conducted among 124 adult (18- 90 years) who underwent Magnetic Resonance Image (MRI) brain at National Hospital of Sri Lanka. Three (03) Regions of Interest (ROI) drawn to include Genu, Body and Splenium of corpus callosum (X1, X2 and X3) of the ADC axial image. The ADC values are calculated automatically by the software and then displayed as a parametric map. Mean ADC values for the male in region X1 = $0.82 \times 10^{-3} \text{ mm}^2/\text{s}$, X2 = $0.8234 \times 10^{-3} \text{ mm}^2/\text{s}$ and X3 = $0.76 \times 10^{-3} \text{ mm}^2/\text{s}$. female mean ADC values were X1 = $0.81 \times 10^{-3} \text{ mm}^2/\text{s}$, X2 = $0.79 \times 10^{-3} \text{ mm}^2/\text{s}$ and X3 = $0.74 \times 10^{-3} \text{ mm}^2/\text{s}$. Statistical analysis has been shown that there was less correlation between age and ADC values of regions X1 ($r = 0.021$), X2 ($r = 0.054$) and X3 ($r = -0.077$) respectively. ADC values of X3 did not show any significant differences ($p > 0.05$) with gender but X1 and X2 region of corpus callosum shown significant difference ($p < 0.05$) with gender. According to the ANOVA it can be identified that there was no any significant difference ($p > 0.05$) between mean ADC values (X1, X2 and X3) and age groups. This study concluded that mean ADC values in normal brain corpus callosum among Sri Lankan population depend on age and gender, statistically there is no significant differences among the mean values.

Keywords: ADC, Corpus callosum, MRI