Directional asymmetry in the volume of the human habenula

Ahumada-Galleguillos, Patricio

Lemus, Carmen G.

Díaz, Eugenia

Osorio-Reich, María

Härtel, Steffen

Concha, Miguel L.

Brain asymmetry is a conserved feature in vertebrates. The dorsal diencephalic habenular complex shows conspicuous structural and functional asymmetries in a wide range of species, yet it is unclear if this condition is also present in humans. Addressing this possibility becomes relevant in light of recent findings presenting the habenula as a novel target for therapeutic intervention of affective disorders through deep brain stimulation. Here we performed volumetric analyses in postmortem diencephalic samples of male and female individuals, and report for the first time, the presence of directional asymmetries in the volume of the human habenula. The habenular volume is larger on the left side in both genders, a feature that can be explained by an enlargement of the left lateral habenula compared to the right counterpart. In contrast, the volume of the medial habenula shows no left?right directional bias in either gender. It is remarkable that