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CBCT analysis and immunohistochemical observation for Schneiderian membrane in human maxillary sinus

(社会人大学院博士課程 3 年人体構造学分野)

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The maxillary sinus is the largest of the paranasal sinuses, and it communicate with the nasal meatus through the ostiomeatal complex of the nasal cavity. Internal side of the maxillary sinus is mucosa membrane called Schneiderian membrane, which is covered with pseudostratified ciliated columnar epithelial cells. This membrane sometimes presents thickening without subjective symptom when patients take a CT-scan for some reasons. More information is therefore needed for phenomena of the membrane thickening. On the other hand, calcitonin gene-related peptide (CGRP) is associated with vasodilation of the trigeminovascular system. The present study is evaluated by the following radiological and immunohistochemical analysis using 129 site of maxilla from Japanese donor cadavers (26 males and 38 Females; age 77.3 ± 8.9 and 86.8 ± 8.8 , respectively): morphological analysis of maxilla and maxillary sinus; histological observation of Schneiderian membrane; and distribution of CGRP, in maxilla and trigeminal ganglion. As a result, maxillary sinus was a square shape cavity (height: 31.4 ± 7.4 mm and width: 30.4 ± 5.6 mm). The thickening Schneiderian membrane was frequent in the middle region of sinus floor (44.2%) on Cone-beam CT. Histologically, increasing basal cells and gland cells on pseudostratified ciliated columnar epithelium was found on thickening mucosa membrane. Immunohistochemically, the CGRP was also partly expressed on the basal cell and gland cell on normal mucosa membrane, and CGRP-positive reactions was found around the nucleus or in the cytoplasm of ganglion cells in the trigeminal ganglion. This implies that CGRP may play some roles for the production of mucosal tissues, leading to thickening of the epithelium.

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Foot morphological changes under weight bearing condition affect the hip and knee joint moments during gait

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宮宗 秀伸、李 忠連、伊藤 正裕**Purpose**

This study was aimed to clarify the relationships between the foot morphological changes under weight bearing condition and the cumulative moments of hip and knee joints during gait.

Materials and Methods

The research subjects were twenty-six healthy adults (14 males and 12 females). A three-dimensional foot digitizer was used to measure the foot morphological parameters in sitting [without weight bearing] or standing positions [weight bearing]. The kinematic values for feet were expressed as the navicular height, medial malleolus height, lateral malleolus height, and calcaneus valgus angle. The height value was normalized by the size of the foot. The adduction cumulative moments for hip and knee during the stance phase were measured and analyzed by a three-dimensional motion analysis system and force platforms. The stance phase of loading response, mid stance, terminal stance, or preswing was defined based on the ground reaction force. Correlation analyses were performed to disclose the relationship between kinematic and kinetic parameters during each gait phase.

Results

Navicular height showed a negative correlation with adduction cumulative moments for hip and knee in the terminal stance phase. Calcaneus valgus angle also had a positive correlation with adduction cumulative moments for hip and knee in the terminal stance phase.

Discussions

The foot with a varus calcaneus and navicular drop was suggested to have decreased adduction cumulative moments in the hip and knee during the terminal stance