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ORIGINAL ARTICLE

Nonmetric analysis of caroticoclinoid foramen in foothills of Himalayas: Its clinicoanatomic perspective

Analyse non métrique du foramen caroticoclinoïdien dans les contreforts de l'Himalaya dans une perspective anatomoclinique

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KEYWORDS

Caroticoclinoid foramen;
Incidence;
Internal carotid artery

Summary

Objective of the study. – Study was conducted to evaluate the incidence of caroticoclinoid foramen in north Indian population. Authors have also endeavoured to discuss its clinical and embryological implications.

Materials and methods. – Study was conducted on 108 dry human skulls in department of anatomy SGRR medical college, Dehradun. Incidence of caroticoclinoid foramen was evaluated in accordance with side.

Results. – A percentage of 22.22 skulls presented with the caroticoclinoid foramen with maximum incidence of unilateral and incomplete type. Incidence revealed no bias towards side.

Conclusion. – Anatomical knowledge about CCF may be helpful to radiologists and neurosurgeons in providing an additional insight into the diagnosis and management of various pathologies around sellar region.

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MOTS CLÉS

Foramen caroticoclinoïdien ;

Résumé

Objectif de l'étude. – L'étude a été menée pour évaluer l'incidence du foramen caroticoclinoïdien dans la population du nord de l'Inde. Les auteurs voulaient aussi discuter ses implications cliniques et embryologiques.

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Incidence ;
Artère carotide
interne

Matériel et méthodes. – L'étude a été menée sur 108 crânes humains secs dans le département d'anatomie SGRR, Dehradun. L'incidence des foramens caroticoclinoidiens a été évaluée selon le côté.

Résultats. – Un pourcentage de 22,22 des crânes présentaient un foramen caroticoclinoidien avec une incidence maximale pour le type unilatéral incomplet. Il n'y avait pas d'incidence différente selon le côté.

Conclusion. – Les connaissances anatomiques concernant le foramen caroticoclinoidien peuvent être utiles aux radiologues et aux neurologues et fournir un éclairage supplémentaire dans le diagnostic et le traitement des différentes pathologies autour de la région sellaire.

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Introduction

Caroticoclinoid foramen (CCF) is an inconsistent structure formed as an outcome of ossification either of the caroticoclinoid ligament or of a dural fold stretching between the anterior and middle clinoid processes of the sphenoid bone during embryogenesis [1]. If present, it intrudes the pathway for clinoidal segment of internal carotid artery while it is rising upward to supply the brain and may result in compression, inflexibility or stretching of the artery [2].

Although infrequent, its presence is of prodigious clinical significance because of its topographic location within the sellar region in close proximity to cavernous sinus with many surgically vital, neurovascular structures populating the area. This fact marks its existence as an entity of colossal importance not only for neurosurgeons but also for neurophysicians, endocrinologists, radiologists, anatomists and biological anthropologists.

Several studies have analysed the characteristics of CCF in different population. Considering the fact that most of the literature lacks the gender-based comprehension of CCF in north Indian population, present study is designed to evaluate its incidence and association with gender in north Indian population. Clinical implications and the embryological basis of its occurrence have also been discussed.

Materials and method

Study consisted of 108 adult dry human skulls of predetermined sex (m = 63, f = 45) procured from the department of anatomy, SGRR medical college, Dehradun. Anterior, middle, and posterior clinoid processes were examined to ascertain their integrity. Those with damaged clinoid processes were excluded from the study. Incidence of the caroticoclinoid foramen was assessed in three categories:

- general;
- based on sex;
- based on side.

Type of the caroticoclinoid foramen was also noted which were in turn divided into three types according to Keyers classification [3]:

- complete type (Fig. 1), if the foramen or bridge occurred properly;

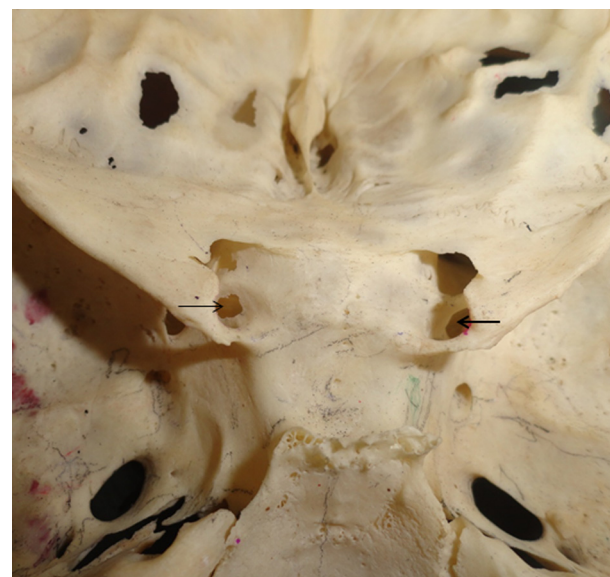


Figure 1 Complete type of foramen (bilateral).

Le type complet de foramen (bilatéral).

- contact type, if there was a suture between the tips of the anterior and middle clinoid processes;
- incomplete type (Fig. 2), if spicules of bone extended medially from the anterior and middle clinoid processes but did not touch side.

The statistical analysis was done using Statistical package for social sciences (SPSS) version 15.0 statistical analysis software. *P*-value was calculated using Chi² test to assess the gender variation in the type and laterality of the foramen.

Result

Present study demonstrated a total incidence of 22.22% of CCF in this population with a predominance of incomplete type (13.9%, Table 1). It showed unilateral presentation in 15 (13.9%) skulls with rest being bilateral 9 (8.3%). In both unilateral and bilaterally present foramina majority showed incomplete type of CCF (U/L: 8.3%, B/L: 5.7%) as compared to complete ones (U/L: 5.7%; B/L: 2.5%) (Fig. 3).

On being evaluated with respect to the side's majority of foramina were on the left (8.3%) as compared to the right

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