



A Brief Review on Some Important Notes about the Anatomy of the Intracranial Sinuses

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Abstract

Effective functioning of the intracranial blood circulation is of great importance for the appropriate function of the brain and surrounding structures. Intracranial veins and sinuses play an important role in this process. Studying the anatomy of the intracranial veins and sinuses is of great importance both in understanding the blood circulation of the brain and relevant structures and also in understanding the relevant pathologies which can affect such circulation. This brief review tries to point to some important notes about the anatomy of the intracranial sinuses.

Keywords: Intracranial Sinuses; Anatomy; Cerebral Blood Circulation; Important Notes; Brief Review

Introduction

Effective function of the brain and relevant structures is directly depending on the function of the intracranial blood circulation. Intracranial veins and sinuses play an important role in this process so having knowledge about the anatomy of intracranial veins and sinuses is of importance to understand the normal and abnormal function of such structures and the brain.

Discussion

The internal, external and meningeal veins collect the blood from the cerebrum, cerebellum and skull's bones into the intracranial sinuses which are lying between the dura mater's meningeal and endosteal layers. These sinuses do not have any valves in them and have thin walls. Communication between these sinuses would easily be done. There are some intracranial sinuses such as Cavernous, Superior and Inferior Sagittal, Occipital, Straight, Sigmoid, Superior and

Inferior Petrosal, Sphenoparietal, Lateral or Transverse and Confluence of sinuses [1,2].

Cavernous sinus which would be a lateral relation of the sphenoidal air sinus, pituitary gland and the sella turcica, is lying on the sphenoid bone body and on its lateral wall. It is in the medial position with regard to the temporal lobe's medial gyrus. Its size would be about one centimeter wide and two centimeters long in an adult. Intercavernous sinuses communicate the right and the left cavernous sinuses with each other. Cavernous sinus mainly contains the internal carotid artery, internal carotid plexus, abducent, oculomotor, trochlear, ophthalmic and maxillary nerves. By having a reticular structure and a structure like a sponge and also having connections with other main sinuses, it plays a role both in supplying blood to other sinuses and also draining blood from them in a frequent manner. In the cavernous sinus, an artery which is the internal carotid artery would completely pass within a venous structure and it is one of the important anatomical notes about the cavernous sinus.

Superior petrosal sinus which connects the transverse and cavernous sinuses with each other is running along the petrous part of the temporal bone. Inferior petrosal sinus which connects the internal jugular vein and cavernous sinus with each other would leave the skull through the jugular foramen [1,3,4].

Superior sagittal sinus begins its course at the foramen caecum. It is draining the granulations of the arachnoid. While the superior sagittal sinus is lying in the superior margin of the falx cerebri, the inferior sagittal sinus is lying in the inferior margin of the falx cerebri. The inferior sagittal sinus is draining the medial cortical veins. The inferior sagittal sinus is smaller than the superior sagittal sinus.

Occipital sinus begins its course at the foramen magnum and will go up until it ends its course in the confluence of sinuses. Sphenoparietal sinus which is draining into the cavernous sinus is running along the lesser wing of the sphenoid bone. Straight sinus is running in the junction of the tentorium cerebelli and falx cerebri. Sigmoid sinus is an S-shaped sinus which deeply grooves the internal surface of the mastoid part of the temporal bone. It is going in an inferomedial direction into the jugular foramen and by joining to the inferior petrosal sinus, would form the internal jugular vein. Lateral or transverse sinus which grooves the squamous temporal bone and the occipital bone, would finish its course in the sigmoid sinus. It begins its course at the internal occipital protuberance and is running in the lateral margin of the tentorium cerebelli. The right transverse sinus is larger than the left transverse sinus. Confluence of sinuses which is connected to the occipital and straight sinuses and also the lateral sinus which is placed on the other side, is located at the posterior and the lowest termination of the superior sagittal sinus in a location which it commonly would turn to the right side to form the lateral sinus. The confluence of sinuses is in a location which is near the internal occipital protuberance [2,5,6].

Results

Intracranial sinuses play an important role in the appropriate functioning of the brain and surrounding structures. Studying about the relevant anatomy of such sinuses reveals such importance more.

Conclusion

Cerebral blood circulation and its effectiveness is of importance in true functioning of the brain and relevant structures. Studying the anatomy of the intracranial veins and sinuses is of importance for the clinicians both in terms of evaluation of the true functioning of the cerebral blood circulation and also relevant pathologies and injuries which may affect such functioning. So having knowledge about the anatomy of the cerebral blood circulation and cerebral veins and sinuses is of great importance to approach the affected patients with relevant pathologies with more precision.

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