SEMIOLOGY OF NEUROSURGICAL SKULL BASE - NOTES

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Each lesion in the skull base involve important neural and vascular elements after this we can appreciate, where the lesion is clinically localized. Also is very important to do the semiological assessment before and after the surgical approach.

Keywords: anterior skull base, the central skull base

INTRODUCTION

As previously noted endo- and exo-skull base as presents from the prior to posterior three compartments: anterior, median and posterior. The petrooccipital suture subdivides along the longitudinal axis of the skull in two lateral regions and a single central aspect (CSB, central skull base).

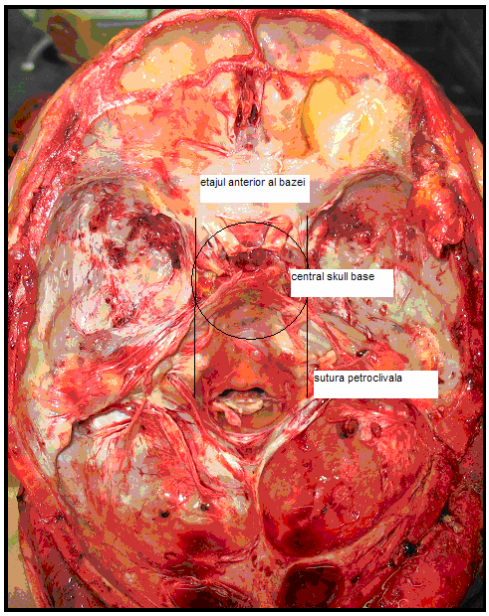

FIG. 1 Skull base and CBS exposure

Anterior limit of ASB, anterior skull base, is defined, as is seen in the figure, the thin posterior wall of frontal sinus which may have various shapes and sizes, and earlier planum clinoidale, sphenoid sinus cavernous ceiling that separates the posterior border of the floor above sets. Horizontal portion of the previous base is relatively convex and presents numerous impressions giriforme (2, 9).

Measurements on cadavers but also on CT or MRI explorations showed that ethmoid fovea is generally less than one inch over the horizontal plane of base important thing in surgical approaches (1).

The most important anatomical structures in the floor above are orbital and paranasal sinuses. Communications with the orbit are often ways of spreading infections or neoplasic processes from the vicinity of orbit with SOFand IOF fissures (superior respective inferior orbital fissure) entail the involvement of nerve III, IV, VI, V1, the ophthalmic vein or to the IOF impairment of V2, infraorbitare vessels and also are involved elements vasculonervoase of septic infratemporale and pterigomaxilare. Lateral portion of the IOF is an important milestone in the orbitotomy process side of previous resection of anterior skull base (1, 5, 9).

Clinic skull base lesions is highly polymorphic due to the complexity of nerve vascular lesions that abound in this region. Until more modern neurosurgical era of skull base lesions were considered virtually inoperable.

In the late nineteenth century began developing techniques for the skull (Kraus, Haltead, Panse) and later as surgeons Chusing, Dandy, Guiot, break barriers to interdisciplinary and put the foundation of what today we call the skull base surgery. In 1992 in Hannover occurs first International Congress of Skull Base. In our country in 2002 is held the first congress of skull base surgery with international participation (A.V. Ciurea).

Clinical features of the skull base are grouped in several syndromes depending on the location of the disease process. These syndromes are characteristic of each group of nerves and vessels that run through the skull.

Thus we define these foramens:

- Cribriform ethmoidale plate with olfactory nerves
- Optic canal with optic nerve
- Superior orbitare fissure with 3, 4, 6, 5I nerves and superior ophthalmic artery and vein
- foramen rotundum, with 5II nerve
- foramen ovale with 5III nerve and meningeal accesory artery
- foramen spinosum, with middle meningeal artery
- internal acoustic pore with 7 and 8 nerves
- foramenul jugular wit 9, 10, 11,nerves and jugular vein
- hipoglosal foraman
- foramen magnum with 11 nerve, medulla spinalis , spinal and vertebral arteries

Cranial nerves palsies:

- 3, 4, 5I, 6 pathological preceses wich involve superior orbital fissure and anterior part of cavernous sinus
- 3, 4, 5I, 5II , Pathologies of posterior cavernous sinus
- 5, 6 apex pietros
- 7, 8, internal acoustic meatus
- 9, 10, 11, foramen jugular
- 9, 10, 11, 12, and simpathetic plexus (1, 5, 9, 8, 10)

SUPERIOR ORBITAR FISSURE SYNDROME AND APEX ORBITARY SYNDROME

This anatomical structure is behind the orbit between the two sphenoid wing and similar to the optical channel contains superior ophthalmic vein, ophthalmic division of trigeminal nerve (lacrimal, frontal, supraorbital, supratrohlear, nasociliar).

Syndrome is characterized by muscle paralysis extraoculari, disruption of the first divisions of the trigeminal and are frequent involvement of the optic nerve.

Clinical experience the following issues: ptosis, dry corneal sensation and decrease visual acuity. This protopsului with tear chemozis suggest an intense and expansive process in the orbit. Potential causes are trauma, neoformații orbit, inflammatory processes and vasculitis (6,7).

Inflammatory processes can be isolated (nonspecific) or associated with systemic diseases: graulomatoza Wegener, poliarterita nodoasă, sarcoidosis, temporal arteritis. Fungal infections are a rare case of Apex orbit syndrome, most often related to micozele sinus. Cavernous sinus extends from the posterior superior fissure to dorsum of the sella.

Syndrome Tolosa - Hunt is an inflammatory granulomatosis involving the inside of the cavernous sinus, superior orbit fissure and has the following diagnostic criteria:

- retroorbitare pain
- oftalmoplegie with or without involvement of the optic nerve and sympathetic plexus,
- symptoms occur episodically with remission spontaneous
- imagistical aspects exclud other pathologies

This syndrome is usually an exclusion syndrome when eliminated other causes: traumatic, inflammatory, neoplasic . THS syndrome (Tolosa-Hunt) is responsible for less than 5% cases of ophtalmoplegia painful and affects both sexes equally, most commonly in the decade of your life.

Pain characteristic pear and retro orbit is very intense and is resolved spontaneously. Cause is unknown and presents a good response to corticosteroids.

During the state of skull base lesions predominate intracranial hipertension syndrome with multiple cranial nerve impaired. This characteristic is Foster- Kennedy syndrome anosmia is present in nerve I damage ipsilateral, optic atrophy and contolateral papillary stasis.

A combination of intracranial hypertension syndrome and the cranial nerves is common in olfactory groove meningioma (4, 8).

Sphenoid fissure syndrome presents impaired nerves II, III, IV, V1, and VI of which may be primitive optic atrophy.

Cavernous sinus syndrome (Foix) include palsies of 3,4,6, nerves with trigeminal involvement.

Top of rock syndrome (Gradenigo) involves reaching nerves V and VI are also known as petrous apicitis involved in otitis media, mastoiditis, is manifested by otalgia and paralysis of nerve ipsilaterala VI.

Paratrigeminal syndrome (Raeder) is practically an apex syndrome of rock to which are added Claude-Bernard - Horner syndrome by involvement of sympathetic pericarotidian plexus. Described in 1918 by Raeder as oculosimphatetic syndrome, he also reported the absence of anhidrozei in the affected side.

Internal acoustic meatus Syndrome is characterized by internal conduct audutiv nerves VII and VIII resulted achieve clinically with peripheral facial palsy, deafness and disorders echilbru.

Posterior foramen, jugular syndrome, paresis nerves IX, X, XI ipsilaterala ie faringovelolaringiana paralysis, paralysis trapeze and SCM, disturbances sensitivity in the territory of pairs X and IX.

Condilo – posterior foramen syndrome : paralysis of nerves IX, X, XI, in addition with paresis of n. XII.

Hemibasal syndrome (Garcin) include cranial nerve involvement ipsilateral on hemiskull base. This is a very rare syndrome observed in neoplasms of exobasal invasion without affecting endobasal encephalon itself. It may be a manifestation of Schminke tumor, a poorly differentiated carcinoma involving lymphoid tissue in the tonsilar region and nasopahrynx.

Villaret syndrome is characterized by paresis of nerves IX, X, XI, XII, in addition with a syndrome Claude - Bernard - Horner by lovely periarterial involvement. It is a rare syndrome characteristic of skull base osteomyelitis occurs in immunocompromised patients.

Besides these syndromes with involvement multiple cranial nerves are described and other congenital syndromes involving the skull base. PHACE, is an acronym which denotes a combination of syndromes involving skull base , neurocutanate events, posterior fossa haemangioma, abnormal blood various aortic coarctation, cardiac defects, sternal disjunction. The most frequent involvement at the skull base is V1.

Also present impaired Dandy Walker type of body calos hypoplasia or agenesis, persistent artery trigeminala, hypo or carotidian agenesis (6,7).

OTHER SYNDROMES WITH ANTERIOR SKULL BASE INVOLVEMENT - CRANIOSINOSTOSIS

Craniosiostosis sunt defined as premature closure of one or more sutures in the skull bones. Cause premature closure of the suture skull growth inhibition on a direction perpendicular to that suture. Sutures may generate more involvement of intracranial hypertension syndrome.

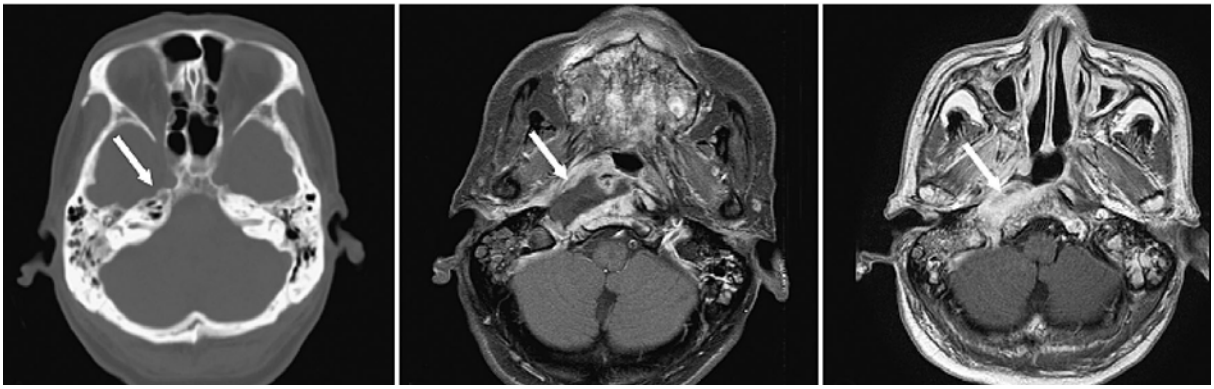

FIG. 3 ostelysis of the skull base with foramen jugular involvement

TERMINOLOGY

Scafocephaly - premature fusion of suture sagital

Trigonocephaly - premature closure of the suture metopes

Plagiocphaly - premature closure of the coronary suture unilaterally Brachycephaly - premature closure of bilateral coronary suture

Posterior plagiocephaly - lambdoide unilateral premature closure of the suture.

Besides these types considered classical (non syndrome) are described also syndromic craniosionostosis characterized by craniofacial dismorphism.

Apert Syndrome is characterized by acrocephalosindactilia and brachycephalism and turicefalie, specific provision of orbits down and out, hipertelorism, is massive facial hypoplasia, other aspects are the deafness, speech disorders, acne, intellectual retardation.

Crouzon syndrome, initially described in 1912 by a French neurosurgeon , is characterized by exorbitism, retrognatism, inframaxilim.

Patients with this syndrome have a very characteristic facies. Premature suture of coronare suture generate oxicephalie Brahim.

Hipertelorismulof the orbit is more common in Crouzon than in Apert syndrome instead hydrocephalus and mental retardation are not so pronounced as in Apertisyndrome. Retroposition of the maxilonasal region can cause breathing difficulties.

CONCLUSIONS

The clinical trial is vital to any medical activity.

Consultation, the first impact with the patient must be able to focus on the location of the lesion, so, flair, integration and synthesis is determined on a case history of exploration foe a good treatmen choice.

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