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لم ترد بالأصل

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THE INFLUENCE OF PROPOFOL VERSUS BARBITURATE ON THE NEUROLOGICAL OUTCOME AFTER HEAD INJURY

THESIS

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TANTA UNIVERSITY

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بسم الله الرحمن الرحيم

قالوا سبحانك

لا علم لنا إلا ما علمتنا

إنك أنت العليم الحكيم

صدق الله العظيم

آيه ٣٢ سورة البقرة

To the memory of

my father

who offered all his life to me

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Neural function is essential to human existence. Thus, loss of any neural element in course of critical illness represents a major loss. Traumatic injury of the brain is normally followed by little or no recovery of function by the lesioned tissue[1].

Cerebral ischemia and/or hypoxia evoke cascade of pathophysiological processes which result in neural death several days later. These delayed lesional maturation is related to activation of suicide genes in cells. This is generally associated with selective cell loss. Free radicals and other mediators are thought to be important contributors to this process which is called apoptosis[2,3].

Neuroprotective strategies employed in the acute period after traumatic CNS injury, attempt to use pharmacological tools to reduce progressive secondary injury processes that follow after the intial lesion, and to limit overall tissue damage[4,5].

REVIEW OF LITERATURE

REVIEW OF LITERATURE

ANATOMY OF CEREBRAL CIRCULATION

Cerebral blood vessels:

The principal arterial inflow to the brain in human is via four arteries, two internal carotids and two vertebrals which lie in subarachnoid space. The vertebral arteries unit to form the basilar artery. The basilar artery and the carotids form the circle of Willis below the hypothalamus. The circle of Willis is the origin of six large vessels supplying the cerebral cortex. There are precapillary anastmoses between the cerebral arterioles but flow through these channels is generally insufficient to maintain circulation and prevent infarction when a cerebral artery is occluded. The vertebral and basilar arteries give branches to spinal cord, brain stem and cerebellum[6].

Venous drainage from the brain by way of deep veins and dural sinuses empties principally into the internal jugular veins, only a small amount of venous blood drains through emissary veins , paravertebral veins, ophthalmic and pterygoid venous plexuses. Dural venous sinuses lie between the layers of the dura mater inside the cranial cavity, they are either paired or single. The paired sinuses are the sphenoparietal, the cavernous, the sigmoid, the transverse, and the superior and inferior petrosal sinuses. The single sinuses are the superior sagittal, the inferior sagittal and the straight sinuses[7].

Internal jugualr vein is the widest of the jugular veins and the longest vein in the neck. It begins in jugular foramen as a continuation of sigmoid sinus which is continuous with transverse sinus. It descends vertically in the neck along the lateral side of internal and common carotid arteries, enclosed with them and the vagus in carotid sheath fascia. It ends behind the medial part of the clavicle by uniting with the subclavian vein to form the innominate vein. Its commencement shows a considerable dilatation called the upper bulb of the jugular vein. The bulb is accommodated in the jugular fossa of the skull and its lumen is always patent because its walls are adherent to the margin of the fossa. At the lower end of the vein there is a smaller dilatation called the lower bulb[8].

The right internal jugular vein is usually wider than the left. There is mixing of venous effluent from both hemispheres, as two thirds of the blood supplied to one hemisphere is drained through the ipsilateral jugular vein, whereas one third drained controlaterally. The cerebral vessels have a number of unique anatomic features. In the choroid plexus there are gaps between the endothelial cells of the capillary wall, but the choroid epithelial cells that separate them from cerebrospinal fluid (CSF) are connected to one another by tight junctions[9].

Innervation of cerebral vessels: [10]

1- Postganglionic sympathetic neurons have their cell bodies in superior cervical ganglia, and their endings contain norepinephrine and neuropeptide Y which is vasoconstrictor.