

*Research Article***Rule of Surgical Decompression in Brain Infarction****Medhat M. EL-Sawy, Ahmed M. Moawad, Mohab M. Nagib and Hany A. ElSaed**

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Abstract

Introduction: ischemic stroke is an acute brain injury occurs as a result of an obstruction of a blood vessel supplying a part of the brain. **Aim of the work :** This study aims to evaluate the rule of surgical decompression in management of brain infarction. **Patients and Methods:** The study was performed at the Department of Neurosurgery of El Minia university Hospital. **Results:** According to our study that performed on 20 patient of massive brain infarction who underwent surgical decompression in our department the following are the results. **Discussion:** Massive brain infarction including malignant MCA infarction or massive cerebellar infarction have been found to result in high morbidity and mortality. **Summary:** 4-Any patient with massive cerebellar infarction with progressive deterioration in the conscious level despite of conservative treatment should undergo suboccipital decompressive craniectomy, excision of the infarct tissues and duroplasty.

KeyWords: Brain Infarction, Blood pressure, acute brain

Introduction

Ischemic stroke is an acute brain injury occurs as a result of an obstruction of a blood vessel supplying a part of the brain. [Adams, et al.; 2010]

The most common causes for ischemic stroke is thrombosis [that may be due to vessel wall diseases or blood diseases causing hyperviscosity or circulation diseases causing slow circulation] or embolism [the source may be the heart or distal vessel]. [Chang & Bendixen; 2011]

The underlying condition for this obstruction is the development of fatty deposits lining the vessel walls; this condition is called atherosclerosis and can cause both cerebral **thrombosis** and/or embolism. [Davis, et al.; 2011]

The commonest risk factors are hypertension, diabetes mellitus, smoking, high cholesterol level, coronary artery disease, coronary artery bypass, or atrial fibrillation. [Mozaffarian, et al.; 2015]

Stroke should be considered in any patient presenting with an acute neurologic deficit (focal or global) or altered level of consciousness. [Ovbiagele, et al.; 2012]

Common signs and symptoms of stroke include the abrupt onset of Hemiparesis, monoparesis, or (rarely) quadriparesis, Hemisensory deficits, Monocular, binocular visual loss, Visual field deficit, dysarthrias, facial droop, ataxia, vertigo or aphasia. [Dirnagl, et al.; 2011]

Noncontrast CT scanning is the most commonly used form of neuroimaging to diagnos stroke. The following neuroimaging techniques may also be used: CT angiography, CT perfusion scanning, brain MRI, carotid duplex scanning, echocardiography and full lap investigations. [Mullins & Lev, 2013]

Quick treatment not only improves chances of survival but also may reduce complications. This includes anticoagulation, antiplatelet, reperfusion and neuroprotective drugs. [Berrouschot, et al.; 2012]

Acute MCA and massive cerebellar infarctions may cause massive brain swelling that may be medically uncontrolled, known as malignant infarction and severe post-ischemic brain edema leading to raised intracranial pressure (ICP), brain herniation, clinical deterioration, coma and death. The death rate in patients who develop massive hemispheric infarction is as high as 80% despite aggressive conservative care so surgery may be required. [Carter, et al.; 2010]

Decompressive craniectomy can be done in patients with massive hemispheric infarction making midline shift more than 10mm or posterior fossa infarction compressing the brain stem within the first 48 hrs of the clinical onset with progressive deterioration of conscious level. [Bettin & Koster; 2012]

Aim of the work

This study aims to evaluate the rule of surgical decompression in management of brain infarction.

Patients and Methods

The study was performed at the Department of Neurosurgery of El Minia university Hospital.

Inclusion criteria:-

- Patients with massive cerebral infarction.
- Patients with massive cerebellar infarction.
- Patients with massive infarction and deteriorated conscious level from that of admission.
- Patients who agree to take a consent from their relatives.

Exclusion criteria:-

- Patients with small infarction.
- Patients who are unfit for operation.
- Patients with infarction due to trauma or tumors.
- Patients who are improved on medical treatment.
- Patients who their relatives refuse the operation.

A total of 20 patients were identified (12 male and 8 female). They had an age range between 30-70 years with massive brain infarction and

all the patients passed through the following sheet:

History:

Personal history: we ask for age and special habits [alcohol or smoking]

Complaint:

most of patients came with conscious level deterioration and heaviness of one side of the body as taken from the relatives

Present history:

onset, course and duration of the complaint varies in most patients and asking about symptoms of cranial nerves affection, motor system, sensory system affection, sphenctic disturbance, speech disorder, symptoms of increased intracranial tension and symptoms of other system affection.

Past history:

asking about chronic diseases as diabetes mellitus and hypertension, operations and drugs intake.

Results

According to our study that performed on 20 patient of massive brain infarction who underwent surgical decompression in our department the following are the results:

Age range between 30-70 years:-

In massive MCA infarction age range between 30-65 years with amedian age of 47.5 years

In cerebellar infarction age range between 50-70 years with amedian age of 60 years

Sex (12 male and 8 female)

In massive MCA infarction 8males and 4 females

In cerebellar infarction 4 males and 4 females

Prognosis of the improved 4 patients with massive MCA infarction after 6 months:-

Prognosis	Patients
Hemiparesis	4
aphasic	1
dysphasic	2
vegetative	3
fully conscious	1

Discussion

Massive brain infarction including malignant MCA infarction or massive cerebellar infarction have been found to result in high morbidity and mortality. (Da Pian R, Ashock P, Sajesh K, Satyendra k, kariyattil R, An and K, Dilip P, Cater BS, Oglivy CS).

In our study, we evaluated the outcomes of 20 patients (12 males and 8 females) with average age of 51 years and massive brain infarction (12 patient with massive MCA infarction and 8 patients with massive cerebellar infarction) who underwent surgical decompressive craniectomy.

In our study, there was 8 patients with massive cerebellar infarction had a median age of 47 years (4 males and 4 females), In previous study done by Inayat Allah Khan at 2008 on 4 patients all had cerebellar infarction with Mean age was 60 years and male to female ratio was 1:1, In previous study done by FA Cioffi at 2002 on 8 patients all had cerebellar infarction with a average age of 54 years (5males and 3 females), in Zhi XU Ng at 2008 study on 8 patients all had massive cerebellar infarction with a median age of 64 years (4 males and 4 females), this difference in age and sex between our study and the other studies could be explained by low number of patients in our study and the others study.

In our study the most common risk factors were hypertension in 6 patients, smoking in 5 patients, diabetes mellitus in 4 patients and 2 patients were with ischemic heart disease, in FA Cioffe study, there was 3 patients were

diabetic, 6 patients were hypertensive and 8 patients were smokers, in Zhi XU Ng study, 6 patient were hypertensive, 3 patients were diabetic and 7 patient were smokers, in Inayat ALLAH study 2 patients were hypertensive, one patient was diabetic, two patients were smokers and 2 patients were with ischemic heart diseases. this difference in risk factors between our study and the other studies could be attributed by low number of patients in our study and the other studies.

Summary And Conclusions

- 1- provide the community with informations about the stroke diseases and their management to increase the public's awareness about the risk factors of stroke and its causes and healthy life styles through the dissemination of mass media such as antismoking media, well balanced diet regime, physical exercise, continues follow up system, and other health promotion programs.
- 2- Apply protocols for proper and rapid referral and transfer of stroke patients to neurosurgery units from all stroke units and neurological outpatients clinic.
- 3- Any patient with massive MCA infarction with progressive deterioration in the conscious level despite of medical treatment should underwent decompressive hemicraniectomy and duroplasty.
- 4- Any patient with massive cerebellar infarction with progressive deterioration in the conscious level despite of conservative treatment should undergo suboccipital decompressive craniectomy, excision of the infarct tissues and duroplasty.

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