Endoscopic Management of Intraventricular Extension of Intracerebral Hemorrhage

Thesis

Submitted for partial fulfillment of the MD degree

In neurosurgery

By

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2013

Acknowledgements

First and foremost I am thankful to ***ALLAH*** *the beneficent and the merciful.*

I wish to express my deepest thanks and gratitude to ***Prof. Dr. Mostafa M. Kotb,*** *Professor of neurosurgery, Faculty of Medicine, Kasr Al Ainy University for his valuable help and sincere guidance. I am very grateful for his great help, advice and encouragement.*

I am also extremely indebted to ***Prof .Dr. Helmy Abd El Haleem,*** *Professor of neurosurgery, Faculty of Medicine, Kasr Al Ainy University, who gave much of his time and spared no effort in guiding me throughout this work. Thanks for constant support, supervision and encouragement.*

I would like to express my deepest thanks and gratitude to ***Prof .Dr. Basim .M. Ayoub*** *Professor of neurosurgery, Faculty of Medicine, Kasr Al Ainy University, for his sincerest support, motivation and encouragement throughout this work.*

Also I am grateful to my staff in El-Sahel teaching hospital, ***Prof. Dr.Abd El Hafeez Shehab El deen and Prof. Dr. Mahmoud Samy.***

Abstract

Key Words : endoscope ,external ventricular draiage ,intraventricular ,haemorrhage , intracerebral haemorrhage

We use endoscope the in cases of intraventricular haemorrage extended from intracerebral haemorrage as regard safety , efficiency , and efficacy in comparison to usage of external ventricular drainage as a treatment for intraventricular haemorrageand we found that endosope was superior than external ventricular drainage in our study.

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List of Abbreviations	
AVM	**Arteriovenous malformation**
CBF	**Cerebral blood flow**
CPP	**Cerebral perfusion pressure**
EVD	**External ventricular drainage**
FDV	**Flow deficit volume**
FFP	**Fresh frozen plasma**
GCS	**Glasgow coma scale**
H	**hydrocephalus**
ICH	**intracranial hemorrhage**
ICP	**Intracerebral pressure**
IPH	**Intraparenchymal hemorrhage**
IVF	**Intraventricular Fibrinolysis**
IVH	**Intraventricular hemorrhage**
IVHS	**Intraventricular hemorrhage score**
LV	**lateral ventricle**
MAP	**Mean arterial pressure**
PIVH	**Peri and intraventricular hemorrhage**
PVH	**Periventricular hemorrhage**
RV	**Right ventricle**

VP	**Ventriculo-peritoneal**
SICH	**Spontaneous intracerebral hemorrhage**

Introduction

Spontaneous intracerebral haemorrhage (SICH) is responsible for 10-15% of the acute stroke. The common causes of SICH are hypertension, aneurysm, arteriovenous malformation (AVM), and vasculopathies. Hypertensive bleeding occurs mainly in putamen, near ruptured aneurismal site with or without subarachnoid haemorrhage, or at the site of AVM, while bleeding due to angiopathy is usually lobar. **(Swamy, 2007)**

An intraventricular hemorrhage, often abbreviated "IVH," is a bleeding into the brain's ventricular system, where the cerebrospinal fluid is produced and circulates through towards the subarachnoid space. It can result from physical trauma or from hemorrhage in stroke. **(Hanley, 2009)**

Brain hemorrhage is the most severe of the major stroke subtypes. Extension of the hemorrhage into the ventricles could occur in 40% of spontaneous ICH cases, could happen early or late in the sequence of events. Epidemiological data demonstrate that the amount of blood in the ventricles relates directly to the degree of injury and likelihood of survival. Secondary tissue injury processes related to intraventricular bleeding can be reversed by removal of clot in animals. Specific benefits of clot removal include limitation of inflammation, edema, and cell death. Restoration of cerebral spinal fluid flow, intracranial pressure homeostasis, improved consciousness, and shortening of intensive care unit stay represent the other benefits that occur from clot removal. Limited clinical knowledge exists about the benefits of intraventricular hemorrhage (IVH) removal in humans, because organized attempts to remove blood have not been undertaken in large clinical trials on a generalized scale**.(Annibale and Hill,2007)**

The primary hematoma and disease process are probably of more significance than the IVH. However, prognosis is also determined by the extent of the hemorrhage. Headache, vomiting, confusion, decreased level of consciousness and, in the case of secondary bleeding, hemiparesis, are common clinical findings. The clots tend to disappear within 2 weeks. **(Cedars-Sinai, 2009)**

Recent CT studies suggest that IVH is more frequent than previously suspected, but it is often not significant clinically. When clots are symptomatic, intraventricular drainage (possibly bilateral) may be useful, but the blood often occludes catheters used for this purpose. **(Edward Feldmann, et al, 2005)**

Neuroendoscopic management of severe IVH in patients was safe, efficiently reduced the amount of ventricular blood and ventricular dilatation, and effectively produced an outcome profile that compares very favorably with other more conventional treatments**. (Longatti, et al, 2004)**

Aim of work

To identify the beneficial of usage of neuroendoscope in cases of intraventricular hemorrhage extended from intracerebral hemorrhage as regard safety, efficiency, and efficacy in comparison to usage of external ventricular drainage as a treatment for intraventricular hemorrhage.

Anatomy

Ventricles of the Brain

The lateral ventricles, the 1st and 2nd ventricles, are the largest cavities of the ventricular system and occupy large areas of the cerebral hemispheres .Each lateral ventricle opens through an interventricular foramen into the 3rd ventricle. **(Fujii, et al 2002)**

The 3rd ventricle is a slit like cavity between the right and left halves of the diencephalons is continuous posteroinferiorly with the cerebral aqueduct, a narrow channel in the midbrain connecting the 3rd and 4th ventricles. **(Fujii, et al, 2002)**

The pyramid-shaped 4th ventricle in the posterior part of the pons and medulla extends inferoposteriorly. Inferiorly, it tapers to a narrow channel that continues into the cervical region of the spinal cord as the central canal. **(Fujii, et al, 2002)**

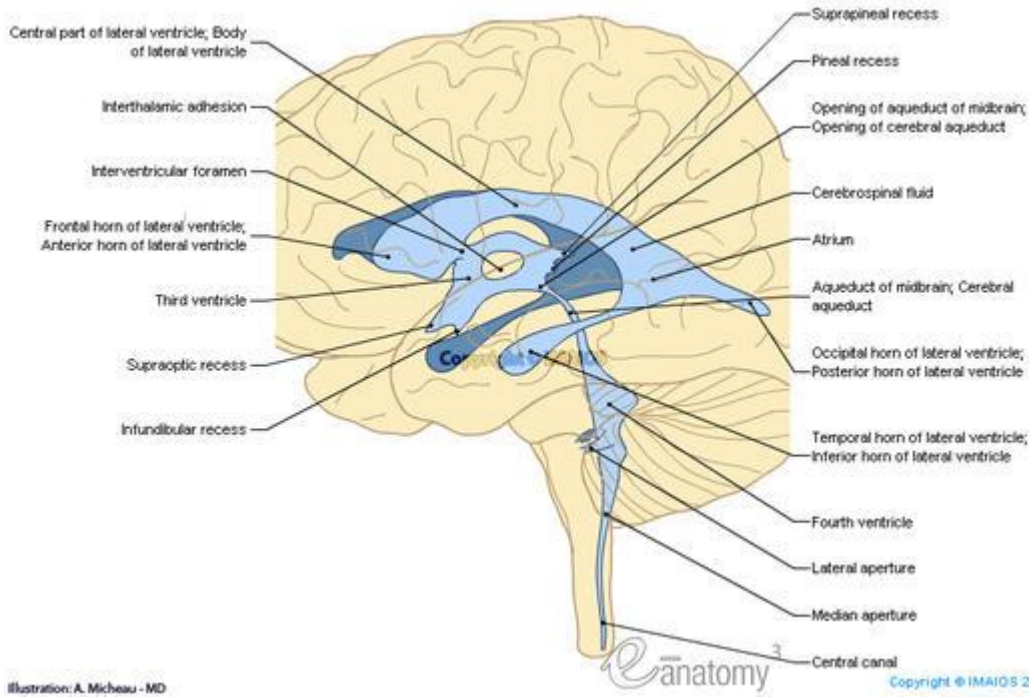

Figure 1: diagram show ventricular system (Fujii, et al, 2002)