A STUDY OF CHEST INFECTION IN ACUTE STROKE PATIENTS

Thesis

Submitted for Partial Fulfillment of the Master Degree in
"Neuropsychiatry"

By

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(M.B.B. Ch.)

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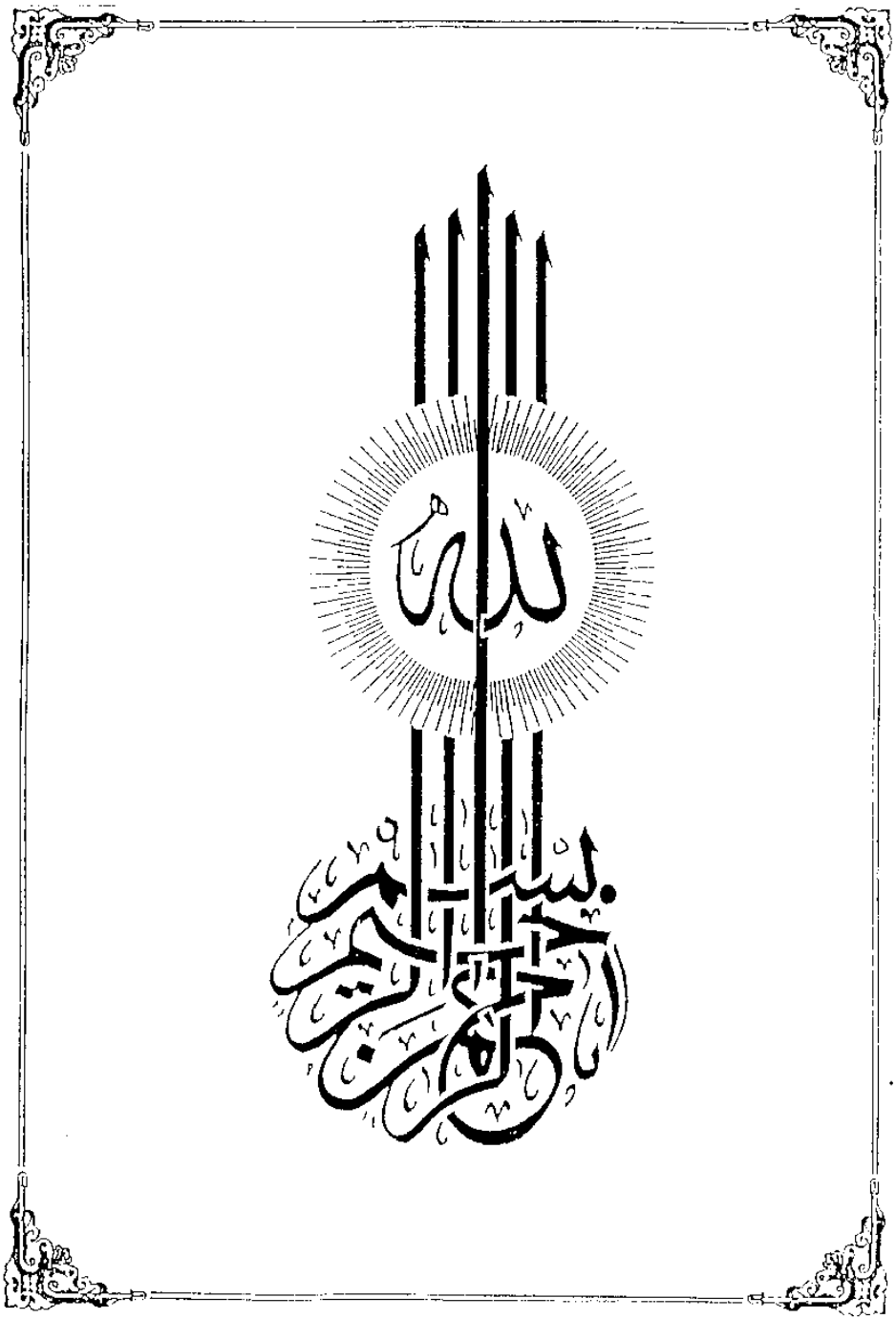

To My Mother

Who Always Forgets
Herself And Remembers Me

ACKNOWLEDGEMENT

Before all and above all.. Thanks to **ALLAH** *for all things.*

My deepest and sincere gratitude goes to Prof. Dr. **Mohamed El-Banouby**, *Professor of Neurology, Faculty of Medicine, Ain Shams University, who enlightened the way to complete this work with his intelligent explanation , precious advice, endless help and fatherly attitude.*

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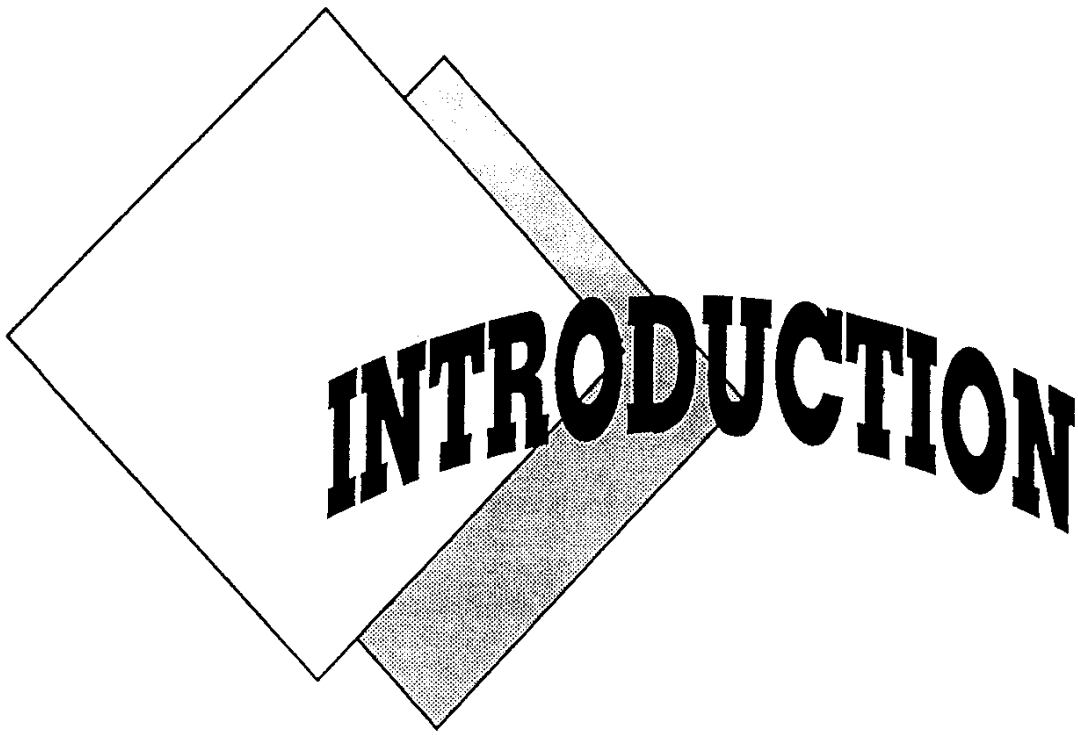


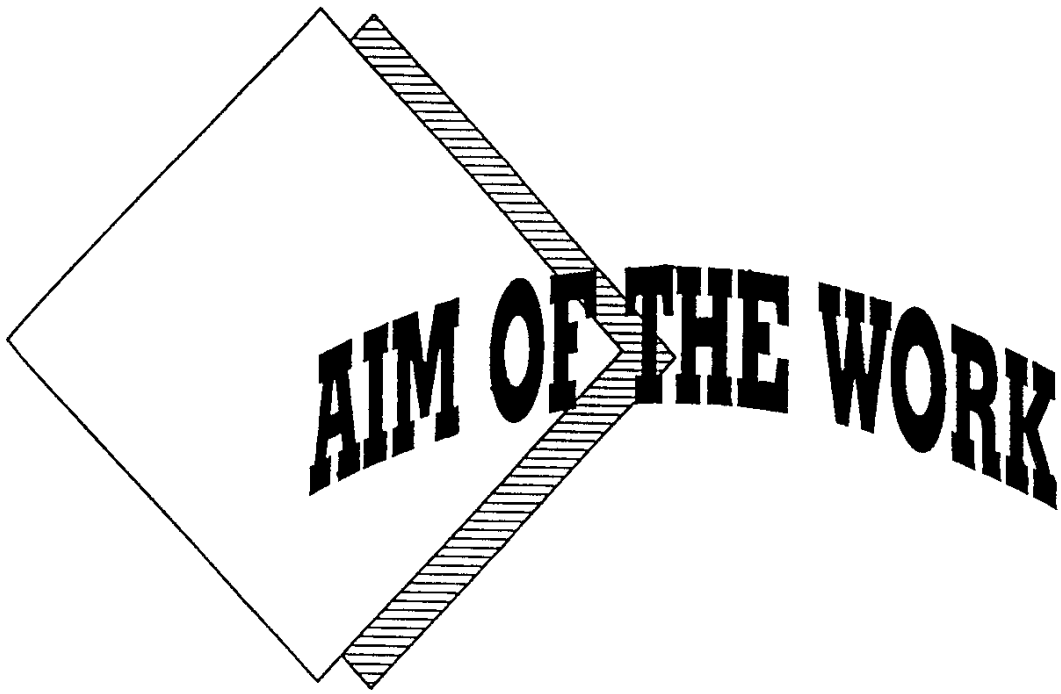
INTRODUCTION

Chest infection espically pneumonia is one of the most common early complications, which frequently observed in the course of acute cerebrovascular accidents *[Schweizer et al., 1991]*.

It was found to be an independent highly significant risk for death in acute stroke patients *[Mosconi et al, 1991]*.

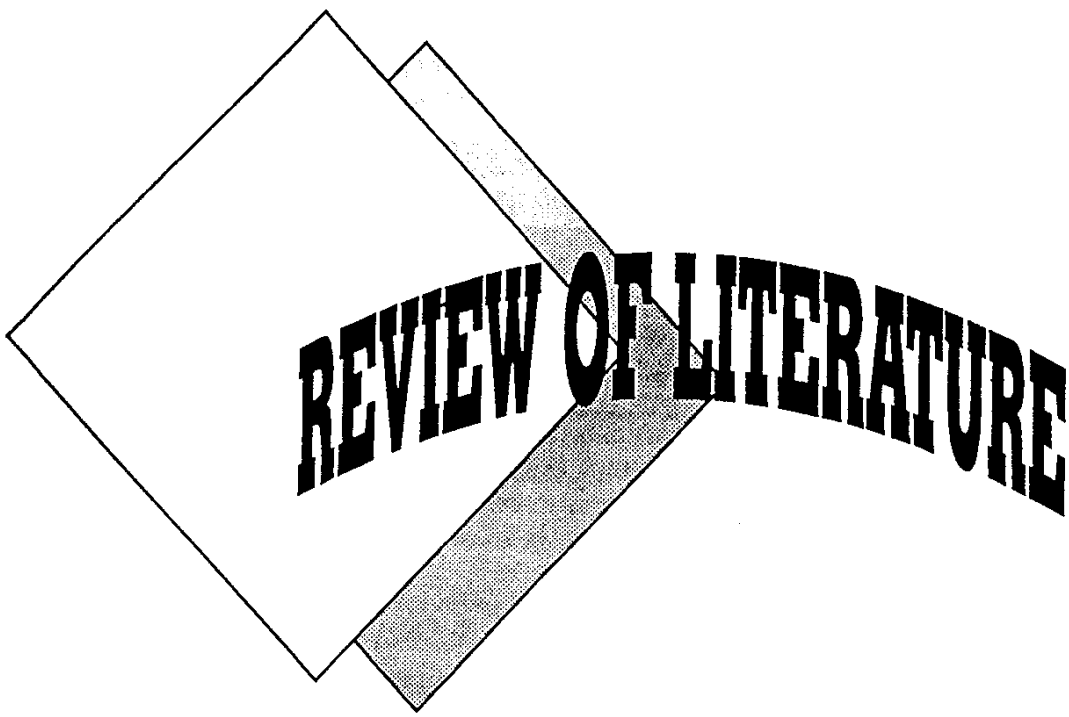
Pneumonia was found to be associated with old aged males, diabetics, uremics, acute ischemic strokes patients; with, impaired level of consciousness, bulbar manifestations, abnormal gag reflex, abscent (or ineffective) cough, on nasogastric tube feeding, with positive history of aspiration, history of smoking, history of obstructive pulmonary diseases and who stayed for longer periods in the hospital. *[Konrod et al 1990, Horner et al 1990 & 1993, Joshi et al 1992 and Johnson et al 1993]*.

That is to say that, there are many factors which might participate in the development of chest infection in acute cerebrovascular accidents.



AIM OF THE WORK

The aim of this work is to detect the incidence of chest infection in cases with acute cerebrovascular accidents and to define the risk factors for developing such an event as regarding, age, sex, type of stroke, site of the lesion and associated diseases, also to search for the preventive measures.



REVIEW OF LITERATURE

General consideration:

Acute stroke (or cerebrovascular accident) is rapidly developing clinical symptoms and or signs of focal, and at times global (applied to patients in deep coma and to those with subarachnoid haemorrhage) loss of cerebral function, with symptoms lasting more than 24 hours or leading to death, with no apparent cause other than that of vascular origin *[Hatano 1976]* with wide range of severity from recovery in a few days, through persistant disability, to death.

Cerebral infarction is responsible for about 80 percent of all first-ever in a lifetime acute strokes, primary intracerebral haemorrhage (PICH), for 10 percent, and subarachnoid haemorrhage (SAH) for 5 percent, these proportions are similar in all places where they have been reliably assessed by CT scaning, except that PICH seems to be rather more common in Japan and China *[Dennis, et al and Huang, et al., 1990]*.

The middle cerebral artery is the artery most commonly affected in stroke syndromes, although emboli have access to the entire cerebral circulation, their distribution is decidedly nonrandom. The two sides of the brain are equally affected, but the middle cerebral artery is the most commonly embolized. *[Gaes et al., 1982]*.

Beyond the stem, flow seems equally directed to the two divisions of the middle cerebral artery , in the upper division, the four posterior branches are arranged in series, providing an orderly set of opportunities for emboli to lodge, while the lower division possess unbranched across the insula untill it reaches the superior temporal plane where it gives off its three main branches, and as a result , embolization into the lower division often results in the simulataneous occlusion of more than one, or even all, of the branches of the division. *[Adams et al 1984].*

The anterior cerebral artery infacts have been reported to represent 0.6 - 3 percent of acute ischemic strokes *[Gacs et al., 1983].*

Occulusion of the posterior cerebral artery or its branches is uncommon compared to involvement of middle cerebral artery, amoung 329 cases of infarction reported by kleihues and Hizawa, the posterior cerebral artery was affected in 35 cases, in another study, Castaigne et al found 22 posterior cerebral artery occluded in their series of 44 autopsied cases of vertibrobasillar territory occlusion, and in only 8, was the posterior cerebral artery occulusion unaccompained by occlusion of more proximal vesseles*[Kleihues et al 1966 and Castaigne et al 1973].*

In another classification,70 percent of acute stroke was ischemic, 27 percent of acute stroke was due to haemorrhage,

whether cerebral 14 percent or subarachnoid 13 percent and 3 percent of acute stroke was due to other causes.

The ischemic stroke was also classified to, 6 percent due to large artery stenosis, 4 percent due to tandem artery pathology, 19 percent lacunar infarction, 14 percnet cardiac source of emboli and 28 percent of infarction of undetermined cause. *[Classification of stoke based on, data from NINDS stroke data bank 1983- 1986].* Freytage found that 34 percent of PICH at putamen, 24 percent lobar, 20 percent thalamic, 7 percent cerebellar, 6 percent pontine, 5 percent caudate and 4 percent putamenothalamic *[Freytage, 1968].*

That patient had a C.T,. scan within the first 24 hours and it was reported as negative although he had the historical and clinical findings of an acute stroke, no cerebral hemorrhage, tumour or subdural haematoma was noted on C.T. scan, this patient placed in the category of cerebral infarction, *[Johnson et al., 1993].*

Central neural mechanisms controling respiration:

It is of special importance to recognize that respiratory system is under the control of the central nervous system, namely, the respiratory muscles are under the control of two major systems- the autonomic nervous system (chemo-sensitive) and the behavioural (willed) system, that are anatomically

distinict and whose descending projections compete for control over spinal respiratory motor neurone activity.

The central neural mechanisms controlling respiration, firstly the autonomic system which depends primarily on the brainstem structures that respond to chemoreceptive and vagal inputs. The brain stem nuclei are of two columns of neurons in the medulla oblongata which appear essential for rhythm genesis in humans, namely, the nucleus retroambigualis (NRA) and nucleus tractus solitarius (NTS). The nucleus retroambigualis lies ventrolateral to the nucleus ambiguus, extending from the vagal rootlets rostrally to the upper cervical root caudally. The nucleus tractus solitarius lies ventrolateral to the tractus solitarius. It is largely composed of inspiratory neurons which receive a strong vagal (Hering- Breuer) input.

Nucleus parabrachialis medialis (NPBM) in the rostral pons, sometimes known as the pneumotaxic region, is concerned with switching between respiratory phases. The integration of the neural activity of these nuclei that provides the normally smooth respiratory pattern is not yet understood. The chemoreceptor input in the carotid and aortic bodies served by the carotid sinus nerve provide the main hypoxic drive in humans. The hypercapnic drive is mediated mainly by chemoreceptors close to the ventral surface of the medulla oblongata which response to changes in CO_2 via pH changes in the cerebrospinal fluid.