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Management of Neurological Complications of Infective Endocarditis in Intensive Care Unit Patients

Essay

Submitted for Partial Fulfillment of Master Degree in Intensive Care

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Dedication

This work is dedicated to the individuals who have given meaning to my life;

To the spirit of my father, to my mother who helped me in every step of my life.

To my wife ,who supported me in my life and encouraged me to complete this work

To my beautiful babies, Arwa and Aysel , who made my days to shine

To my family and all my friends

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Mohamed Ibrahim Ahmed Elaidy

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List of Abbreviations

%	Percent
CMA	Cerebral mycotic aneurysm
CNS	Central nervous system
CoNS	Coagulase-Negative Staphylococcal Species
CSF	Cerebrospinal fluid
CT	Computed tomography
DWI	Diffusion weighted imaging
ECG	Electrocardiography
FLAIR	Fluid-attenuated inversion recovery
GRE	Gradient echocardiography
HACEK	Haemophilus aphrophilus, Actinobacillus actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, Kingella kingae
HCIE	Health care infective endocarditis

ICMA	Intracerebral mycotic aneurysm
ICU	Intensive care unit
IE	Infective endocarditis
IgG	Immunoglobulin G
INR	International normalized ratio
IV	Intravenous
IVDA	Intravenous drug abuse
MCA	Middle cerebral artery
MR	Mitral regurgitation
MRI	Magnetic resonance imaging
MRSA	Methicillin-Resistant Staphylococcus Aureus
MSSA	Methicillin-Sensitive Staphylococcus Aureus
NIE	Nosocomial infective endocarditis
NVE	Native valve endocarditis

PVE	Prosthetic valve endocarditis
r-tPA	Recombinant tissue plasminogen activator
S.aureus	*Staphylococcus aureus*
SBE	Subacute bacterial endocarditis
SC	Subcutaneous
TEE	Transesophageal echocardiography
tPA	Tissue plasminogen activator
TTE	Transthoracic echocardiography

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Introduction

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Patients with infective endocarditis are generally referred to the intensive care unit for one or more organ dysfunctions caused by complications of infective endocarditis. Neurological events are frequent causes of intensive care unit admission in patients with infective endocarditis **(Sonneville et al., 2011).**

Neurological complications of infective endocarditis can arise through the following mechanisms; occlusion of cerebral arteries by emboli derived from endocardial vegetation, cerebral hemorrhage and infection of the meninges **(Sonneville et al., 2011).**

Echocardiography has a well-defined role in the diagnosis and management of embolic events that occur with infective endocarditis, and its value has increased considerably since the introduction of transesophageal echocardiography, allowing a more complete assessment of vegetation morphology **(Di Salvo et al., 2001).**

Computed tomography (CT) scan is the most easily feasible neuroimaging in critically unstable patients. However, Magnetic resonance imaging (MRI) is more sensitive and when performed should follow a standardized protocol **(Duval et al., 2010).**

Neurologic complications may have consequences on the management of patients with infective endocarditis, their presence can help the diagnosis due to the peripheral manifestations of infective endocarditis. They also can affect medical therapy by changing the type and length of antibiotic or anticoagulant therapy. Moreover, neurologic complications may influence indications, timing, and type of cardiac surgery **(Habib et al., 2009).**

The risk of symptomatic emboli associated with infective endocarditis was reduced in patients who received continuous daily antiplatelet therapy before onset of infective endocarditis **(Anavekar et al., 2007).**

The safety of cardiopulmonary bypass has been controversially debated for years in patients with neurological complications of infective endocarditis. Anticoagulation during cardiac surgery may increase the risk of hemorrhagic transformation of an asymptomatic ischemic stroke. Moreover, episodes of hypotension during procedure might exacerbate a pre-existing ischemic brain

lesion. However, Stroke is not a contraindication for urgent valve replacement in acute infective endocarditis **(Piper et al., 2001).**

Aim of the Work

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To define criteria of infective endocarditis and discuss pathophysiology, early diagnosis and management of neurological complications of infective endocarditis in intensive care unit patients.