Abstract

Background: Acute heart failure is classically defined by symptoms and signs related to elevated ventricular filling pressures. Regardless of precipitant, underlying etiology or ejection fraction, the vast majority of hospital admissions are the result of worsening chronic heart failure. For the acutely decompensated patient, 4 hemodynamic profiles ; stratified by degree of decongestion ("dry" or "wet") and adequacy of perfusion ("warm" or "cold") predict prognosis and guide therapy.

Aims: The aim of this essay is to discuss the new modalities in diagnosis and management of acute heart failure.

Methodology: The ability to accurately measure cardiac output remains an integral part of diagnosing and managing critically ill patients. There are many minimally invasive devices currently available on the market designed to reduce the risks associated with the use of PAC. These devices have variable degrees of 'invasiveness' with some being only marginally less invasive than PACs.

Conclusion: VA ECMO is a potential therapy for patients with refractory cardiogenic shock, particularly in those with severe cardiogenic shock and combined respiratory failure. VA ECMO for cardiogenic shock is a bridge to recovery, durable VAD implantation, or transplantation, and clinical trajectory and prognosis must enter centrally into the judgment of a patient's candidacy for ECMO. The use of VA ECMO in critically ill patients requires a multi- specialty team of practitioners.

Keywords: Modalities, Diagnosis and Management, Acute Heart Failure

Contents

List of Abbreviations

ACE	: Angiotensin converting enzyme
ADM	: Adrenomedullin
ANP	: Atrial natriuretic peptide
ARB	: Angiotensin-receptorblocker
ARNi	: Angiotensin receptor–neprilysin inhibitor
AT1	: Angiotensin type 1
AV	: Atrioventricular
AVP	: Action of arginine vasopressin
BNP	: B-type natriuretic peptide
BUN	: Blood urea nitrogen
cAMP	: Cyclic adenosine monophosphate
CCO	: Continuous Cardiac Output
CCU/ICU	: Coronary cardiac unit/ intensive care unit
CHF	: Congestive heart failure
COPD	: Chronic obstructive pulmonary disease
CRP	: C-reactive protein
DBP	: Diastolic blood pressure
DRIs	: Direct renin inhibitors

ECG : Electrocardiogram

ECLS : European Extracorporeal Life Support

ECOM : Endotracheal cardiac output monitor

ED : Esophgeal Doppler

ELSO : Extracorporeal Life Support Organization

ESC : European Society of Cardiology

ETA : Endothelin-A

ETB : Endothelin- B

ETT : Endotracheal tube

FiO2 : Fraction of inspired oxygen

GDF : Growth differentiation factor

GFR : Glomerular filtration rate

HF : Heart failure

HFSA : Heart Failure Society of America

IABP : Intra-aortic balloon pump

JVP : Jugular venous pressure

LAD : Left anterior descending artery

LiDCO : Lithium dilution Cardiac Output

LV : Left ventricular

MCS : Mechanical circulatory support

MIBG : Metaiodobenzyleguanidine

MR-proADM : Mid-regional pro adrenomedullin

MR-proANP : Mid-regional pro atrial natriuretic peptide

NE : Norepinephrine

NO : Nitric oxide

NOS : Nitric oxide synthase

NPR-A : Natriuretic peptide receptor A

NPR-C : Natriuretic peptide receptor C

NRG-1 : Neuregulin-1

NT-proBNP : N-terminal proBNP

PAC : Pulmonary artery catheter

PiCCO : Pulse Index Continuous Cardiac Output

PPV : Positive pressure ventilation

RAAS : Renin–angiotensin–aldosterone system

RAS : Renin-Angiotensin system

rhNRG-1 : Recombinant human neuregulin-1

RXFP : Relaxin family peptide

SBP : Systolic blood pressure

sGC : Soluble guanylate cyclase

SV : Stroke volume

SVR : Systemic vascular resistance

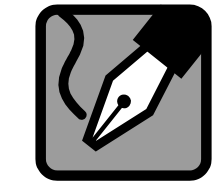
TEE : Transesophgeal echocardiography

VA : Veno-arterial

ECMO : Extra Corporeal Membrane Oxygenation

List of Figures

List of Tables



Introduction

Aim of Essay

Chapter (1)

Anatomy and Physiology of the Heart

Chapter (2)

Pathophysiology of Acute Heart Failure

Chapter (3)

Diagnosis and Management of Acute Heart Failure

Chapter (4)

New Modalities of Diagnosis and Management

Summary