Oncological Emergencies for Intensive Care Patients

Essay

Submitted for Partial Fulfillment of Master Degree in General Intensive Care

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Abstract

Introduction: Oncologic emergencies can occur at any time during the course of a malignancy, from the presenting symptom to end-stage disease. Although some of these conditions are related to cancer therapy, they are by no means confined to the period of initial diagnosis and active treatment.

Treatment requires systematic evaluation and early empirical antibiotics. Hypercalcemia of malignancy is the most common metabolic emergency in cancer patients. Non-specific clinical features may cause delay in diagnosis and increase morbidity and mortality.

Aims: The aim is to discuss oncological diseases in ICU regarding pathophysiology, complications, early detection and management.

Summary: Over the last 15 years, the management of critically ill cancer patients requiring intensive care unit (ICU) admission has substantially changed. High mortality rates (75-85%) were reported 10-20 years ago in cancer patients requiring life sustaining treatments, especially when mechanical ventilation was needed or in recipients of hematological stem cell transplantation.

Oncologic emergencies can threaten the well-being of almost any patient with a malignancy. Because these conditions span the chronologic spectrum of a disease's natural history, from initial presentation to late recurrence to end-stage disease, all clinicians should be familiar with the manner in which these conditions emerge, as well as understand the methods for their prompt assessment and treatment. Prompt identification and intervention in these emergencies can prolong survival and improve quality of life, even in the setting of terminal illness.

Keywords: Oncological, Emergencies, Intensive Care Patients, Management

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List of Abbreviations

5-HT : 5-hydroxytryptamine

6-MP : 6-mercaptopurine

ADH : Antidiuretic hormone

ALL : Lymphoblastic leukemia

ANC : Absolute neutrophil count

APACHE : Acute physiology and chronic health evaluation

CHF : Congestive heart failure

CO2 : Carbon dioxide

COX-2 : Cyclo-oxygenase-2

CSFs : Colony-stimulating factors

CT : Computed tomography

DMSO : dimethyl sulfoxide

EBRT : External beam radiation therapy

EKG : Electrocardiogram

ESMO : European Society for Medical Oncology

G6PD : Glucose-6-phosphate dehydrogenase;

GVHD : Graft versus host disease)

HSCT : Hematopoietic stem cell transplantation

HV : Hyperviscosity syndrome

ICP : Intracranial pressure

ICU : Intensive care unit

IDSA : Infectious Diseases Society of America21

IGFs : Insulin-like growth factors

Igs : Immunoglobulins

ITDD : Intrathecal drug delivery

IV : Intravenous

LFT : Liver function test

MM : Multiple myeloma

MPM II : Mortality probability models II

MRI : Magnetic resonance imaging

MSCC : Malignant spinal cord compression

Nd:**YAG** : Neodymium yttrium

NRS : Thenumerical rating scale

NSAIDs : Nonsteroidal anti-inflammatory drugs

PO : Per OS

PS : Performance status

PTHrP : Parathyroid hormone-related peptide

PV : Polycythemia vera

S.L. : Sublingual

SAPS II : Acute physiology score

SC : Subcutaneous

SIADH : Syndrome of inappropriate antidiuretic hormone

SQ : Subcutaneous.

SV : Serum viscosity

SVC : Superior vena cava

TLS : Tumor lysis syndrome

TLS : Tumor lysis syndrome

VAS : Visualanalogue scales

VEGF : Vascular endothelial growth factor

VRS : Verbal rating scale

WBC : White blood cell count

WBRT : Whole-brain radiation therapy

WM : Waldenström macroglobulinemia

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Introduction

Oncologic emergencies can occur at any time during the course of a malignancy, from the presenting symptom to end-stage disease. Although some of these conditions are related to cancer therapy, they are by no means confined to the period of initial diagnosis and active treatment **(*Lewis et al., 2011*).**

Management of critically ill cancer patients requiring intensive care unit admission has substantially changed. High mortality rates (75-85%) were reported 10-20 years ago in cancer patients requiring life sustaining treatments. Because of these high mortality rates, the high costs, and the moral burden for patients and their families, ICU admission of cancer patients became controversial, or even clearly discouraged by some. As a result, the reluctance of intensivists regarding cancer patients has led to frequent refusal admission in the ICU. However, prognosis of critically ill cancer patients has been improved over the past 10 years leading to an urgent need to reappraise this reluctance ***(Thiery et al., 2007).***

Supportive care is an area of high importance in oncology and European Society For Medical Oncology (ESMO) published Clinical Practice Guidelines on the

management of a variety of issues: Management of oral and gastrointestinal mucosal injury, Central venous access in oncology, Treatment of dyspnea in advanced cancer patients, Prevention of chemotherapy and radiotherapy induced nausea, Erythropoiesis stimulating agents in the treatment of anemia in cancer patients, Management of cancer pain, Management of venous thrombo-embolism (VTE) in cancer patients, Cardiovascular toxicity induced by chemotherapy, targeted agents and radiotherapy, Management of chemotherapy extravasation ***(Azoulay et al., 2011).***

Several complications of cancer may require critical care for palliative management. These include acute CNS disorders (e.g, spinal cord compression), severe metabolic disorders (e.g, hypercalcemia, tumor lysis syndrome), orthopedic disorders (e.g, pathologic fracture), urologic disorders (e.g, hematuria and acute obstructive uropathy), general surgical disorders (e.g, GI bleeding and intra-abdominal abscess formation), malignant effusions (e.g, pericardial effusion with cardiac tamponade), complications of chemotherapy and radiotherapy and rarely superior vena cava syndrome ***(Conway et al., 2007).***

Treatment requires systematic evaluation and early empirical antibiotics. Hypercalcemia of malignancy is the

most common metabolic emergency in cancer patients. Non-specific clinical features may cause delay in diagnosis and increase morbidity and mortality **(*Samphao et al., 2010).***

Increased awareness and improved prophylaxis have helped oncological diseases, their occurrence continues to present challenges to the practicing oncologist. Prompt recognition and the rapid institution of adequate therapy are essential to a successful outcome ***(Howard et al., 2011).***

Aim of the Work

The aim is to discuss oncological diseases in ICU regarding pathophysiology, complications, early detection and management.

Chapter (1):

Admission Criteria for Oncolcgical Patient to ICU

Over the last 15 years, the management of critically ill cancer patients requiring intensive care unit (ICU) admission has substantially changed. High mortality rates (75-85%) were reported 10-20 years ago in cancer patients requiring life sustaining treatments, especially when mechanical ventilation was needed or in recipients of hematological stem cell transplantation ***(Khassawneh et al., 2002).***

Because of these high mortality rates, the high costs and the moral burden for patients and their families, ICU admission of cancer patients became controversial or even clearly discouraged by some authors. . However, prognosis of critically ill cancer patients has been improved over the past 10 years leading to an urgent need to reappraise this reluctance ***(Thiery et al., 2005).***