

CONTENTS

Preface xiii
Kalpalatha K. Guntupalli and Michael O. Gardner

Critical Illness and Pregnancy: Review of a Global Problem 555
Dilip R. Karnad and Kalpalatha K. Guntupalli

Obstetric patients are a small but important group of patients in the intensive care unit (ICU). Their problems are unique and need specialized attention. Decision making may be confounded by physiologic changes in pregnancy. In developed countries with good antenatal care, comparatively fewer obstetric patients are admitted to ICUs, but the maternal mortality rate remains high in the developing countries. Medical disorders and organ dysfunction caused by critical illness of pregnancy differ from region to region. With improvement in antenatal care, the number of ICU admissions for obstetric disorders would decline in developing countries; however, this number may increase gradually in developed countries because of increasing maternal age and pregnancies in women with complicated chronic medical disorders.

Acute Lung Injury and Acute Respiratory Distress Syndrome in Pregnancy 577
Venkata D. Bandi, Uma Munnur, and Michael A. Matthay

Acute respiratory failure can be the result of a variety of clinical conditions, such as congestive heart failure, pneumonia, pulmonary embolism, exacerbation of obstructive lung diseases, and acute respiratory distress syndrome (ARDS). This article focuses on developments related to acute lung injury and ARDS and reviews epidemiology, pathogenesis and therapeutic advances with an emphasis on the obstetric population. A brief discussion of tocolytic-induced pulmonary edema, preeclampsia, venous air embolism, and aspiration-related ARDS is included. Management of pregnant women with ARDS is outlined.

Physiology of Normal Pregnancy

609

Asha N. Chesnutt

The pregnant patient in the intensive care unit (ICU) poses many challenges. Physicians and nurses need to understand the basic concepts of maternal physiology and fetal physiology. Physicians must care for the mother and consider the potential adverse effects that diagnostic and therapeutic interventions might have on the fetus. This article focuses primarily on the normal pregnant state with appropriate references to how pregnancy may affect the patient in specific circumstances relating to the ICU. The physiologic adaptation of the major organs to the pregnant state should be familiar to ICU physicians.

Airway Problems in Pregnancy

617

Uma Munnur and Maya S. Suresh

Obstetric anesthesia is considered to be a difficult, high-risk practice that exposes the anesthesiologist to increased medicolegal liability. Anesthetic management of parturient patients is a challenge, as it involves simultaneous care of two lives. The anesthesia practitioner has a duty to provide safe anesthetic care, including effective airway management when providing regional or general anesthesia. The potential need to manipulate the airway is perhaps the leading cause of concern among obstetric anesthesiologists.

Amniotic Fluid Embolism

643

Imran Aurangzeb, Liziamma George, and Suhail Raooif

Amniotic fluid embolism is a rare syndrome that can have debilitating and lethal consequences. It is a difficult and somewhat intangible diagnosis that warrants a high index of suspicion by physicians. Prompt and aggressive supportive treatment is required to lessen an otherwise dismal outcome, which may include death and permanent disability. This article provides an account of the protean clinical features, pathogenesis, and principles involved in treatment.

Sepsis and Septic Shock in Pregnancy

651

Jeanne S. Sheffield

Sepsis is the leading cause of death in critically ill patients in the United States. Improvements in the critical care management of septic shock have led to a decrease in the mortality rate in the past decade. Septic shock in obstetric patients is rare. Pregnant women as a group are younger and have fewer comorbid conditions. Though little is known regarding the treatment of sepsis and septic shock in pregnancy, the same principles and treatment modalities discussed in this article should govern the management of pregnant women.

Pulmonary Embolism and Pregnancy

Sarah E. Stone and Timothy A. Morris

661

Pulmonary embolism is a significant cause of morbidity and mortality during pregnancy and the puerperium. The spectrum of venous thromboembolism is difficult to diagnose. Objective diagnostic testing is crucial and should not be delayed. Anticoagulation is the mainstay of therapy for deep vein thrombosis and pulmonary embolism. Most of the literature and practice protocols for the treatment of pregnant women are based on data extrapolated from the nonpregnant population, and more research is needed to improve the understanding of the efficacy and safety of testing and therapy in the pregnant population.

Ovarian Hyperstimulation Syndrome

Jaime F. Avecillas, Tommaso Falcone, and Alejandro C. Arroliga

679

Ovarian hyperstimulation syndrome (OHSS) is an iatrogenic complication that is associated with modern techniques for in vitro fertilization. Extensive efforts have been made to understand the pathophysiology and to improve the management of this entity. The severe and life-threatening forms of the ovarian hyperstimulation syndrome are still challenging for critical care physicians. This article reviews the pathogenesis, epidemiology, classification, clinical manifestations, and complications of these forms of OHSS. The different therapeutic options currently available are reviewed, and a stepwise approach for the management of these patients is provided.

Spectrum of Hypertensive Emergencies in Pregnancy

Charles S. Henry, Scott A. Biedermann, Michel F. Campbell, and Jayarama S. Guntupalli

697

Hypertension in pregnancy represents a spectrum of clinical entities, including pregnancy-induced hypertension (PIH), pre-eclampsia, eclampsia, and hemolysis, elevated liver enzyme levels, low platelet count syndrome. Although hypertension is a common denominator in this group of disorders, the pathogenesis, clinical features, and clinical course of these disorders is variable and somewhat distinct. Therapy must be tailored to the clinical entity and the patient. The incidence and prevalence of preeclampsia and eclampsia are decreasing worldwide. This decrease partly may be caused by the improved treatment of PIH and improved obstetrical services.

Exacerbation of Underlying Pulmonary Disease in Pregnancy

Rubin Cohen, Arunabh Talwar, and Linda S. Efferen

713

This article examines the management and outcomes of pregnant women with cystic fibrosis, primary pulmonary hypertension, and

sarcoidosis. Pregnancy and the puerperium are associated with important cardiopulmonary changes that can adversely affect the clinical condition. Management of pregnant women with cystic fibrosis should be done with careful attention to complications of altered body weight, diabetes, and liver disease. Primary pulmonary hypertension is characterized by a progressive increase in pulmonary pressure and resistance in the absence of an identified cardiac or pulmonary cause. A multidisciplinary approach to the management of patients with primary pulmonary hypertension is of great importance for a successful maternal and fetal outcome. Good maternal and fetal outcomes are possible in women with restrictive lung disease in general and sarcoidosis in particular. The management of pregnancy, labor, and delivery are not altered by the presence of sarcoidosis.

Acute Asthma in Pregnancy

731

Elizabeth S. Guy, Ashok Kirumaki, and Nicola A. Hanania

Asthma is one of the most common medical conditions that can complicate pregnancy. Although most pregnant women with asthma have controlled disease, some women may experience exacerbation of their disease, necessitating immediate intervention. This article discusses the interrelations between asthma and pregnancy and presents an overview on the management of pregnant women presenting to the hospital with acute severe asthma. Treating physicians must overcome the common belief that pregnant women should not take any medications during pregnancy, and they should keep asthma in pregnant women under control to minimize the risk for maternal and fetal hypoxia.

Cardiopulmonary Resuscitation and Somatic Support of the Pregnant Patient

747

Antara Mallampalli, David J. Powner, and Michael O. Gardner

Cardiopulmonary arrest during pregnancy is a rare event that critical care clinicians must be prepared to manage. The causes of cardiopulmonary arrest during pregnancy, recommended modifications to cardiopulmonary resuscitation protocols that are specific to pregnancy, indications for and timing of perimortem cesarean delivery, and the expected fetal outcomes are reviewed. Rarely, brain death of a pregnant patient may occur in a setting where continued support of the mother is possible to prolong the pregnancy and improve fetal outcome. Prolonged somatic support of pregnant patients who are brain dead presents specific management challenges, but has been accomplished. The physiologic changes that occur after brain death and recommendations for somatic support of the brain dead pregnant patient also are reviewed.

Pregnancy-Associated Severe Liver Dysfunction

763

Jay S. Steingrub

Determining the cause of liver disease in pregnancy can present a difficult challenge for clinicians. Minor elevations in aminotransferases may be a harbinger of life-threatening processes, such as acute fatty liver of pregnancy (AFLP) or hemolysis, elevated liver enzyme levels, or low platelet count (HELLP) syndrome. Preeclampsia, HELLP syndrome, and AFLP form a spectrum of disease that ranges from involving mild symptoms to severe life-threatening multiorgan system dysfunction. They have been shown to be the primary causes of severe hepatic dysfunction during pregnancy. This article attempts to define the clinical and diagnostic features, pathophysiology, and treatment options of these diseases.

Peripartum Cardiomyopathy

777

Mark Tidswell

The diagnosis of peripartum cardiomyopathy should be considered whenever women present with heart failure during the peripartum period. This cardiomyopathy is distinguished by rapid onset, occurrence in the peripartum period, and significant improvement in up to 50% of affected women. The cause and pathogenesis of this dilated cardiomyopathy remain unknown. Treatment is similar to medical therapy for other forms of dilated cardiomyopathy. Worsening of heart failure may require management in the intensive care unit with support by vasodilators, inotropes, and ventricular assist devices. Patients with severe ventricular dysfunction are less likely to survive and recover normal cardiac function. Subsequent pregnancies may provoke a recurrence, even in patients who apparently recover.

Cumulative Index 2004

789