Neurotrauma Management for the Severely Injured Polytrauma Patient

James M. Ecklund
Leon E. Moores
Editors

Springer

Neurotrauma Management for the Severely Injured Polytrauma Patient

James M. Ecklund · Leon E. Moores
Editors

Neurotrauma Management for the Severely Injured Polytrauma Patient

Springer

Editors
James M. Ecklund
Department of Neurosciences, Inova Fairfax Medical Campus
Inova Neuroscience Institute
Falls Church, VA
USA

Leon E. Moores
Pediatric Neurosciences
Inova Neuroscience Institute
Falls Church, VA
USA

ISBN 978-3-319-40206-2 ISBN 978-3-319-40208-6 (eBook)
DOI 10.1007/978-3-319-40208-6

Library of Congress Control Number: 2016942513

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer International Publishing AG Switzerland

Foreword

Competing Demands

We all deal with competing demands each and every day. You have a full clinic, and the CEO requests your presence at an "emergency" administrative meeting dealing with a safety issue. While slipping out of clinic for that meeting the ER pages you, and one of your patients is there having just had a seizure. Simultaneously, a nurse calls, and the family of one of your post-op patients has arrived and wants to talk with you. In the midst of this onslaught, your spouse calls and wants guidance on what the mechanic just relayed about the car. We each live versions of this scenario every day.

Being needed at multiple places at the same time with the expectation that we will give our full attention to important matters creates tremendous stress. Throughout our training and careers we learn to handle this challenge. We prioritize these competing demands, adapt to the situation, and successfully deal with the issues. We survive by developing supportive teams including administrative assistants, NP's, PA's, or residents to help us effectively manage the demands. The simplicity in managing our personal demands is that we alone are the subject matter expert and can independently make the decisions for which we must bear the consequences.

The polytrauma patient with a CNS injury has many unique needs that also create competing demands in a different context. In this situation the patient can't depend on himself or herself to manage these competing demands. The patient is totally dependent on the healthcare team to seamlessly work together to save his or her life and preserve their function. A therapy that optimizes treatment for an injured brain may be suboptimal for another non-cranial injury. The choice of treatment strategies and timing of interventions must take into account all of the patient's injuries and be prioritized appropriately. These complex decisions are required throughout the entire trauma system of care including in the prehospital environment, the ER or trauma bay, the OR, the ICU, the floor, the rehabilitation facility, and transitioning back to the home environment.

In medicine, our training and daily operations are too often organized in accordance with a silo mentality. Nurses have their reporting structure. Specialties such as General Surgery, Orthopedics, Critical Care Medicine, Neurosurgery, and Rehabilitation have their own independent physician departments and services. The Service Line concept and Trauma Services

development are efforts to mitigate the inefficiency that often results while working within the traditional silo structures. Leadership is critical to develop, inspire, and demand the teamwork crucial to success. All players involved in the care of a polytrauma patient must work within a context of competence, integrity, mutual respect, and clear communication. What is best for the patient must always trump any parochial or individual service interests. Our patients rely on continuity between the silos within our heathcare and trauma systems. Their lives and functional outcomes depend on us collaborating as highly functioning, effective, and efficient teams.

The purest environment I have ever witnessed for the care of the polytrauma patient has been during deployments to combat zones in Iraq and Afghanistan. In these highly structured environments, the multidisciplinary team works as a single unit without distractions of secondary administrative or strategic priorities. Everyone is completely focused on the patients 24 hours per day. Subspecialty barriers are broken down, and all members of this healthcare team live, work, play, and if necessary fight together. There is a discrete chain of command and defined responsibilities for decisions, but specialty expertise is respected and relied upon. All members are kept informed through regular formal and frequent informal communication processes.

This book is designed to provide a single reference that outlines the salient issues while highlighting the important contribution each specialty brings to the care of the polytrauma patient with CNS injury. The authors are all well respected experts in their fields, and have extensive experience working with other disciplines in a collaborative manner. I am confident this text will serve as an excellent reference, and be a useful addition to trauma and neurosurgical library collections, as we all continuously strive to improve our care for these very complex patients.

Jim Ecklund

Preface

When Jim Ecklund approached me to co-edit a text about the care of the polytrauma patient with CNS injury I knew it would be worth the effort. History has taught us that tremendous medical advances are made during periods of armed conflict. The severity of wounds, the volume of patients, the complexity of medical and surgical decision-making, and the teamwork inspired by wartime care bring professionals from many different disciplines together with an urgency and a sense of purpose that is sometimes difficult to achieve otherwise. Those lessons, and many others learned every day by our civilian friends and colleagues across many disciplines of medicine and surgery, are presented here. This multidisciplinary approach is not uncommon, but we have taken it a step further and asked our authors to specifically focus their chapters on the boundaries, the conflicts, and the solutions they have found when specialties intersect while caring for a critically ill neurotrauma patient.

Our goal is to leverage lessons learned by our military and civilian authors, apply them to the broader practice of complex trauma care, and help make them stick. The "stickiness" is the difficult part, because after each crisis we often fall back on our pre-crisis behaviors, and nowhere is this tendency more apparent than in military medicine. Nations throughout history have ramped up their medical systems during war, learned great lessons (from the ambulance systems of Napoleon to the flying ICUs of the current conflicts), and then disbanded their military healthcare system between wars—only to see the need to rebuild and relearn prior lessons for the inevitable next conflict.

We hope this book will add to the great works both completed and in preparation and inform the next generation of medical professionals who are entrusted with the lives of the world's most severely injured—military or civilian.

Jim and I have been privileged throughout our careers, to this very day, to work with some of the finest medical professionals around the world. Our patients have taken us on journeys requiring us to stretch the limits of our own skills, the teams we have led, and the organizations in which we have cared for those patients. In doing so it became ever more clear to us as we grew in our practice of neurosurgery that reaching across traditional boundaries and collaborating in a multidisciplinary fashion is not only good for patients but ultimately good for us. Our professional and personal lives

have been enriched immeasurably by our colleagues, so many of whom are contributors to this work.

We want to acknowledge the work of all the authors represented here. Their willingness to take time out of their busy schedules to put pen to paper speaks to their commitment to insure the lessons of multidisciplinary, collaborative work to care for our sickest patients are not lost in the day-to-day routine of our healthcare lives.

In addition, there is no doubt in my mind or Jim's that this book would not have been possible without the untiring efforts of our colleague Michele Theiss. Keeping two busy neurosurgeons on task is challenging enough, but to consistently do so with professionalism, grace, style, and eloquence takes a very special person with impressive leadership talents. Michele encompasses all these things and more. Jim and I, the authors, and all readers will be forever in her debt.

Last but certainly not least I have to acknowledge my co-editor. Jim and I have known each other as cadets at West Point, served together as neurosurgery residents, attending neurosurgeons and Chiefs of Neurosurgery at Walter Reed, and shared stories of combat surgery. Jim has always been an extraordinary leader, and he has been able to immensely elevate the level of every program he has led through his vision, hard work, and dogged determination. When Jim Ecklund says he's going to get something done, bank on it. Most of all I have to thank Jim for keeping me around all these years and allowing me to serve beside a leader of such character, integrity, and dedication to his patients and his profession.

Falls Church, USA Leon E. Moores

Acknowledgment

The editors would like to acknowledge the efforts of Inova's Academic Coordinator Michele Theiss, without whom this textbook would not have been possible.

Michele's tireless spirit and optimistic outlook kept all contributors on track and helped to inspire the entire effort.

Thank you Michele

Contents