Abdul Qayyum Rana
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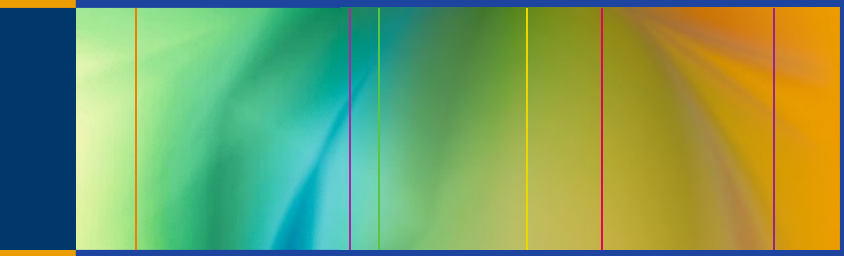

Neurological Emergencies in Clinical Practice

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– Abdul Qayyum Rana

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– John Anthony Morren

Preface

This manual is designed to provide a stepwise approach for the management of neurological emergencies and is meant to primarily serve as a guide for medical students and residents on their neurology rotation. An attempt has been made to address day-to-day neurological issues in the emergency room, neurology ward/floor, and intensive care unit in an organized manner. Neurological problems are very complex but the protocols used in this book have been simplified so that trainees should not feel overwhelmed. This book is not to be taken as a comprehensive reference for neurology but more as a survival tool for those in training.

An attempt has been made to keep the format of the topics similar to help the trainee develop a stepwise approach to clinical problems. A brief introduction is provided for each topic, which is then divided into three main sections: stabilize the patient, identify the underlying cause, and treat the underlying cause. At the end, the discussion paragraphs provide some supplementary information not discussed under the previous headings. Some components of the initial history, physical examination, and investigations have been duly incorporated in the "stabilize the patient" section.

Most of the information presented in this book is considered generally accepted practice; however, the author and publisher are not responsible for any errors, omissions, or consequences from the application of this information and make no expressed or implied warranty of the contents of this publication. The reader is advised to check the package

insert of each drug for its indication, dosage, and warnings. Suggestions to improve this publication are welcome and should be directed to the authors.

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Contents

Chapter 1
Coma

1. *Lethargy* is characterized by a state of drowsiness from which the patient can be aroused but cannot maintain that state of arousal and therefore relapses into drowsiness.
2. *Stupor* is characterized by incomplete arousal to painful/vigorous and continuous stimuli with absent or only minimal response to verbal command.
3. *Coma* is characterized by the total absence of awareness of self and relationship to the environment without any localizing or discrete defensive responses to external painful stimuli [1].

Stabilize the Patient

ABCs

1. Check the airway; if obstructed, clear by suction. Comatose patients are at risk of hypoxia and aspiration and need to be intubated to protect the airway and ensure adequate oxygenation. If there is any indication of respiratory depression in a lethargic or stuporous patient (especially if Glasgow Coma Scale is less than or equal to eight) or if the patient is comatose and has not been intubated already, proceed to intubation (using rapid induction) immediately. *If there is a potential cervical spine injury, the head should not be moved until radiographic assessment is done*. If there is a suspicion of cervical spine injury,

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the intubation should be done with in-line stabilization without extension of the neck or by surgical airway if necessary.
2. Check the vital signs and assess if the patient is hemodynamically stable. Place the patient on a cardiac monitor and pulse oximeter. Maintain the circulation; monitor the blood pressure, pulse, heart rate and rhythm continuously.

Focused History

Enquire about presenting symptoms and the onset from the available resources, including family members and paramedics, and review the emergency medical services sheet.

Focused Exam

1. Inspect the whole body for signs of trauma.
2. Do a focused neurological examination (see Glasgow Coma Scale (GCS) - Table 1.1) including observation of breathing pattern, pupil size and response, any eye deviation, facial symmetry (observe grimace), lateralization of movements in response to painful stimuli, posturing, deep tendon reflexes, and plantar responses (see section "Identify the Underlying Cause" for more detailed examination).
3. Perform cardiac and pulmonary auscultation.

STAT Labs and Treatments

1. Obtain finger-stick glucose. *Always give 100 mg of intravenous thiamine* before giving glucose 50 ml of D50W I.V., to prevent Wernicke's encephalopathy.
2. Get an ECG; start an I.V. line; draw STAT serum chemistry for electrolytes, glucose, BUN, creatinine, calcium, magnesium, AST, ALT, TSH, serum cortisol, PT/INR,

Table 1.1 Glasgow Coma Scale (GCS)

Eye opening	
Spontaneous	4
To voice	3
To pain	2
None	1
Best motor response	
Obeys commands	6
Localizes pain	5
Withdraws to pain	4
Flexor posturing	3
Extensor posturing	2
No response	1
Best verbal response	
Conversant and oriented	5
Conversant and disoriented	4
Inappropriate words	3
Incomprehensible sounds	2
No verbal response	1
Total score	3–15

CRP, ESR, serum osmolality, arterial blood gases, CBC, toxicology screen for opiates, barbiturates, cocaine, sedatives, antidepressants, and alcohol.

3. Start normal saline and insert a Foley catheter. Send urine for urine analysis with reflex culture and urine toxicology screen.
4. Obtain a STAT CT scan of the head to rule out intracranial causes such as epidural hematoma, subdural hematoma, intracerebral hemorrhage, subarachnoid hemorrhage, acute large ischemic stroke, other space-occupying lesion, herniation, midline shift, and other mass effects.