

Contents

| | | |
|----------------------------------|--|--|
| 1 | Polysomnographic Recording Technique..... 1 | |
| | Sudhansu Chokroverty and Sushanth Bhat | |
| 2 | Electroencephalography for the Sleep Specialist..... 26 | |
| | Sudhansu Chokroverty, Eli S. Neiman, and Sushanth Bhat | |
| 3 | Sleep Stages and Scoring Technique 77 | |
| | Raman K. Malhotra and Alon Y. Avidan | |
| 4 | Sleep-Disordered Breathing and Scoring 100 | |
| | Robert J. Thomas, Sudhansu Chokroverty, and Sushanth Bhat | |
| 5 | Basic Circadian Rhythms and Circadian Sleep Disorders..... 119 | |
| | Roneil Malkani and Phyllis C. Zee | |
| 6 | Hypnogram Analysis..... 127 | |
| | Robert J. Thomas, Sudhansu Chokroverty, and Sushanth Bhat | |
| 7 | Sleep-Related Movements and Scoring Techniques..... 143 | |
| | Birgit Högl and Raffaele Ferri | |
| 8 | Cardiac Arrhythmias..... 154 | |
| | Robert J. Thomas, Sudhansu Chokroverty, and Sushanth Bhat | |
| 9 | Uncommon, Atypical, and Often Unrecognized PSG Patterns 167 | |
| | Sudhansu Chokroverty, Sushanth Bhat, and Robert J. Thomas | |
| 10 | Motor Disorders During Sleep 193 | |
| | Sudhansu Chokroverty, Marco Zucconi, Federica Provini, and Mauro Manconi | |
| 11 | Sleep and Epilepsy..... 203 | |
| | Marco Zucconi and Sudhansu Chokroverty | |
| 12 | Sleep Dysfunction and Sleep-Disordered Breathing in Miscellaneous Neurological Disorders..... 219 | |
| | Sudhansu Chokroverty, Sushanth Bhat, and Federica Provini | |
| 13 | Neuroimaging Techniques 242 | |
| | Thien Thanh Dang-Vu, Pierre Maquet, and Martin Desseilles | |
| 14 | Specialized Techniques..... 255 | |
| | 14A Multiple Sleep Latency Testing 255 | |
| | Sudhansu Chokroverty | |
| | 14B Actigraphy 259 | |
| | Sudhansu Chokroverty and Marco Zucconi | |
| | 14C Recommendations for Practical Use of Pulse Transit Time as a Tool for Respiratory Effort Measurements During Sleep and Microarousal Recognition..... 273 | |
| | Jean-Louis Pépin, Renaud Tamisier, and Patrick Lévy | |
| | 14D The Cyclic Alternating Pattern 282 | |
| | Mario Giovanni Terzano, Liborio Parrino, Fernando De Paolisi, and Elena Colizzi | |
| | 14E Peripheral Arterial Tonometry..... 292 | |
| | Robert J. Thomas | |
| | 14F The Electrocardiogram-Spectrogram 296 | |
| | Robert J. Thomas | |
| 15 | Positive Pressure Titration 300 | |
| | Robert J. Thomas | |
| 16 | Oral Appliances and Surgical Techniques for Obstructive Sleep Apnea Syndrome Therapy .. 326 | |
| | John A. Fleetham and Fernanda R. Almeida | |
| 17 | Pediatric Polysomnography 331 | |
| | Timothy F. Hoban | |
| Appendix: Video Vignettes | | |
| | Vignette 1: Narcolepsy: Unequivocal Diagnosis After Split-Screen, Video-Polysomnographic Analysis of a Prolonged Cataplectic Attack 363 | |
| | Mark Eric Dyken, Jason Maxfield, and Deborah C. Lin-Dyken | |
| | Vignette 2: Obstructive Sleep Apnea Associated With Cerebral Hypoxemia..... 367 | |
| | Mark Eric Dyken, George B. Richerson, and Christine L. Glenn | |
| | Vignette 3: The Rapid Eye Movement Sleep Behavior Disorder Leading to a Subdural Hemorrhage 371 | |
| | Mark Eric Dyken and Deborah C. Lin-Dyken | |
| | Vignette 4: Isolated Sleep Paralysis: An REM-“Sleep” Polysomnographic Phenomenon as Documented With Simultaneous Clinical and Electrophysiologic Assessment 375 | |
| | Mark Eric Dyken, Deborah C. Lin-Dyken, and Nivedita Jerath | |
| | Vignette 5: Confusional Arousals..... 378 | |
| | Mark Eric Dyken, Deborah C. Lin-Dyken, and Nivedita Jerath | |

Vignette 6: Sleepwalking 380
 Mark Eric Dyken, Deborah C. Lin-Dyken, and Siddharth Bajpai

Vignette 7: Hypnagogic Hallucination..... 382
 Mark Eric Dyken, Deborah C. Lin-Dyken, and Nivedita Jerath

Vignette 8: Sleep Terrors..... 386
 Mark Eric Dyken, Deborah C. Lin-Dyken, and Jeffrey Boyle

148 Actigraphy 292
 Subhansu Chokroverty and Marco Zucconi

14C Recommendations for Practical Use
 of Pulse Transit Time as a Tool for
 Respiratory Effort Measurements During
 Sleep and Microarousal Recognition 273
 Jean-Louis Pépin, Renaud Tamisier, and Patrick Lavie

14D The Cyclic Alternating Pattern 282
 Mario Giovanni Terzano, Libero Parrino,
 Fernando De Paolis, and Elena Colizzi

14E Peripheral Arterial Tonometry 292
 Robert J. Thomas

14F The Electrocardiogram-2-pectogram 296
 Robert J. Thomas

15 Positive Pressure Titration 300
 Robert J. Thomas

16 Oral Appliances and Surgical Techniques for
 Obstructive Sleep Apnea Syndrome Therapy 326
 John A. Fleetham and Fernanda R. Almeida

17 Pediatric Polysomnography 331
 Timothy F. Hoban

Appendix: Video Vignettes

Vignette 1: Narcolepsy: Unequivocal Diagnosis
 After Split-Screen, Video-Polysomnographic
 Analysis of a Prolonged Cataleptic Attack 363
 Mark Eric Dyken, Jason Maxwell, and Deborah C. Lin-Dyken

Vignette 2: Obstructive Sleep Apnea Associated
 With Cerebral Hypoxemia 367
 Mark Eric Dyken, George B. Richardson, and Christine L. Glenn

Vignette 3: The Rapid Eye Movement Sleep Behavior
 Disorder Leading to a Subdural Hemorrhage 371
 Mark Eric Dyken and Deborah C. Lin-Dyken

Vignette 4: Isolated Sleep Paralysis: An REM-Sleep
 Polysomnographic Phenomenon as Documented
 With Simultaneous Clinical and Electrophysiologic
 Assessment 375
 Mark Eric Dyken, Deborah C. Lin-Dyken, and Nivedita Jerath

Vignette 5: Confusional Arousals 378
 Mark Eric Dyken, Deborah C. Lin-Dyken, and Nivedita Jerath

1 Polysomnographic Recording Technique 1
 Subhansu Chokroverty and Sushanth Bhat

2 Electroencephalography for the Sleep
 Specialist 26
 Subhansu Chokroverty, El-S. Neimar, and Sushanth Bhat

3 Sleep Stages and Scoring Technique 77
 Ramon K. Malhotra and Alon Y. Avidan

4 Sleep-Disordered Breathing and Scoring 100
 Robert J. Thomas, Subhansu Chokroverty, and Sushanth Bhat

5 Basic Circadian Rhythms and Circadian Sleep
 Disorders 119
 Ronali Malani and Phyllis C. Zee

6 Hypnogram Analysis 127
 Robert J. Thomas, Subhansu Chokroverty, and Sushanth Bhat

7 Sleep-Related Movements and Scoring
 Techniques 143
 Brian Hojl and Raffaele Ferri

8 Cardiac Arrhythmias 154
 Robert J. Thomas, Subhansu Chokroverty, and Sushanth Bhat

9 Uncommon, Atypical, and Often Unrecognized
 PSG Patterns 167
 Subhansu Chokroverty, Sushanth Bhat, and Robert J. Thomas

10 Motor Disorders During Sleep 193
 Subhansu Chokroverty, Marco Zucconi, Federica Provini,
 and Mauro Mancini

11 Sleep and Epilepsy 203
 Marco Zucconi and Subhansu Chokroverty

12 Sleep Dysfunction and Sleep-Disordered
 Breathing in Miscellaneous Neurological
 Disorders 219
 Subhansu Chokroverty, Sushanth Bhat, and Federica Provini

13 Neuroimaging Techniques 242
 Thien Tranh Dang-Vu, Pierre Maquet, and Martin Desseilles

14 Specialized Techniques 252

14A Multiple Sleep Latency Testing 252
 Subhansu Chokroverty

Video Contents

VIDEO VIGNETTES

- 9** Uncommon, Atypical, and Often Unrecognized PSG Patterns
- Video Vignette 15: Confusional Arousal in REM Sleep..... 189
- Video Vignette 16: Dream-Enacting Behavior in NREM Sleep..... 190
- Video Vignette 17: Complex Nocturnal Behavior in Sleep: Respiratory Event Related 191
- Video Vignette 18: Complex Nocturnal Behavior in Sleep: Induced by Hypoglycemia..... 191
- Video Vignette 19: Respiratory Event-Related Rhythmic Movements 192
- 10** Motor Disorders During Sleep
- Video Vignette 12: Propriospinal Myoclonus 196
- Video Vignette 13: Nocturnal Eating (Sleep-Related Eating Disorder) 197
- 11** Sleep and Epilepsy
- Video Vignette 14: Nocturnal Frontal Lobe Epilepsy..... 203
- 12** Sleep Dysfunction and Sleep-Disordered Breathing in Miscellaneous Neurological Disorders
- Video Vignette 9: Delirium Tremens..... 238
- Video Vignette 10: Fatal Familial Insomnia 238
- Video Vignette 11: Morvan's Syndrome..... 239
- Video Vignette 20: REM Behavior Disorder in Myotonic Dystrophy Type 2..... 228
- 14D** Specialized Techniques: The Cyclic Alternating Pattern
- Video Vignette 30: A Sequence of Cyclic Alternating Pattern (CAP) in NREM Sleep Followed by Non-CAP Sleep in a Normal Subject 283
- Video Vignette 31: Cyclic Alternating Pattern in a Focal Frontal Epilepsy..... 286
- Video Vignette 32: Cyclic Alternating Pattern Modulates the Occurrence of Minor Motor Events in a Nocturnal Frontal Lobe Epilepsy 286
- Video Vignette 33: Major Seizure in Nocturnal Frontal Lobe Epilepsy Occurring During a Cyclic Alternating Pattern Sequence in NREM Sleep.... 286

- Video Vignette 34: Cyclic Alternating Pattern Sequence and Periodic Limb Movement During Sleep..... 286
- Video Vignette 35: Cyclic Alternating Pattern in Severe Obstructive Sleep Apnoea Syndrome 286
- Video Vignette 36: Non-Cyclic Alternating Pattern Sleep in Severe Sleep Apnoea Syndrome With Continuous Positive Airway Pressure Therapy..... 286
- Video Vignette 37: Cyclic Alternating Pattern in Cheyne-Stokes Respiration 286

VIDEOS

- 16** Oral Appliances and Surgical Techniques for Obstructive Sleep Apnea Syndrome Therapy
- Video 16.1: All Appliances..... 326
- Video 16.2: Appliance A 326
- Video 16.3: Appliance B 326
- Video 16.4: Appliance C 326
- Video 16.5: Appliance D..... 326
- Video 16.6: Bite Registration 326
- Video 16.7: Titration..... 326
- Video 16.8: Patient Assessment 326
- Video 16.9: Written Consent..... 326
- Video 16.10: Side Effects 1 326

VIDEO VIGNETTES

Appendix

- Video Vignette 1: Cataplexy..... 363
- Video Vignette 2: Obstructive Sleep Apnea and Coma 367
- Video Vignette 3: REM Sleep Behavior Disorder 371
- Video Vignette 4: Sleep Paralysis..... 375
- Video Vignette 5: Adult Confusional Arousal..... 378
- Video Vignette 6: Sleepwalking and Confusional Arousal..... 380
- Video Vignette 7: Hypnagogic Hallucination 382
- Video Vignette 8: Sleep Terror..... 386

Other Video Vignettes

- Video Vignette 21: Adaptive Ventilation Success
- Video Vignette 22: Ataxic Breathing
- Video Vignette 23: Adaptive Ventilation Failure
- Video Vignette 24: Obstruction or Periodic Breathing
- Video Vignette 25: Periodic Breathing Turned Stable in REM

- Video Vignette 26: Chemoreflex-Driven Sleep Apnea
- Video Vignette 27: Untreatable Mixed Sleep Apnea
- Video Vignette 28: Untreatable Mixed Apnea—Acetazolamide Effect
- Video Vignette 29: Unstable to Stable Transition

Video Vignette 34: Cyclic Alternating Pattern Sequence and Periodic Limb Movement During Sleep 286

Video Vignette 35: Cyclic Alternating Pattern in Severe Obstructive Sleep Apnea Syndrome 286

Video Vignette 36: Non-Cyclic Alternating Pattern Sleep in Severe Sleep Apnea Syndrome With Continuous Positive Airway Pressure Therapy 286

Video Vignette 37: Cyclic Alternating Pattern in Cheyne-Stokes Respiration 286

VIDEOS

Video 16: Oral Appliances and Surgical Techniques for Obstructive Sleep Apnea Syndrome Therapy 326

Video 16.1: All Appliances 326

Video 16.2: Appliance A 326

Video 16.3: Appliance B 326

Video 16.4: Appliance C 326

Video 16.5: Appliance D 326

Video 16.6: Bite Registration 326

Video 16.7: Titration 326

Video 16.8: Patient Assessment 326

Video 16.9: Written Consent 326

Video 16.10: Side Effects 1 326

VIDEO VIGNETTES

Video Vignette 1: Catalepsy 363

Video Vignette 2: Obstructive Sleep Apnea and Coma 363

Video Vignette 3: REM Sleep Behavior Disorder 371

Video Vignette 4: Sleep Paralysis 373

Video Vignette 5: Adult Confusional Arousal 378

Video Vignette 6: Sleepwalking and Confusional Arousal 380

Video Vignette 7: Hypnagogic Hallucination 382

Video Vignette 8: Sleep Terror 386

Appendix

Video Vignette 9: Uncommon, Atypical, and Often Unrecognized PSG Patterns 189

Video Vignette 10: Motor Disorders During Sleep 190

Video Vignette 11: Dream-Enacting Behavior in REM Sleep 190

Video Vignette 12: Complex Nocturnal Behavior in Sleep: Respiratory Event Related 191

Video Vignette 13: Complex Nocturnal Behavior in Sleep: Induced by Hypoglycemia 191

Video Vignette 14: Nocturnal Frontal Lobe Epilepsy 203

Video Vignette 15: Nocturnal Frontal Lobe Epilepsy and Epilepsy 203

Video Vignette 16: Nocturnal Frontal Lobe Epilepsy 203

Video Vignette 17: Nocturnal Frontal Lobe Epilepsy 203

Video Vignette 18: Nocturnal Frontal Lobe Epilepsy 203

Video Vignette 19: Respiratory Event-Related Rhythmic Movements 192

Video Vignette 20: REM Behavior Disorder in Myotonic Dystrophy Type 2 228

Video Vignette 21: Morvan's Syndrome 239

Video Vignette 22: REM Behavior Disorder 238

Video Vignette 23: Fetal Familial Insomnia 238

Video Vignette 24: Delirium Tremens 238

Video Vignette 25: Sleep Dysfunction and Sleep-Disordered Breathing in Miscellaneous Neurological Disorders 238

Video Vignette 26: Delirium Tremens 238

Video Vignette 27: Fetal Familial Insomnia 238

Video Vignette 28: Morvan's Syndrome 239

Video Vignette 29: REM Behavior Disorder in Myotonic Dystrophy Type 2 238

Video Vignette 30: A Sequence of Cyclic Alternating Pattern (CAP) in REM Sleep Followed by Non-CAP Sleep in a Normal Subject 283

Video Vignette 31: Cyclic Alternating Pattern in a Focal Frontal Epilepsy 286

Video Vignette 32: Cyclic Alternating Pattern Modulates the Occurrence of Minor Motor Events in a Nocturnal Frontal Lobe Epilepsy 286

Video Vignette 33: Major Seizure in Nocturnal Frontal Lobe Epilepsy Occurring During a Cyclic Alternating Pattern Sequence in REM Sleep 286

Video Vignette 34: Specialized Techniques: The Cyclic Alternating Pattern 286