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Case Studies in POLYSOMNOGRAPHY INTERPRETATION

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Preface

This volume began as a series of workshops in polysomnogram interpretation and is intended to afford the reader a unique opportunity to match her/his own expertise and interest in interpreting polysomnograms with national and international expert polysomnographers. The authors, experts in adult and pediatric sleep medicine, offer examples of important polysomnograms and clinical cases directly from their own sleep laboratories: not idealized or touched up, these are the "real life" tracings as they were recorded.

The authors have provided detailed descriptions of their interpretative thought processes as well as relevant references, such that the reader is able to, in a sense, sit with these experts as they work through their own interpretations. By design, many of the incorrect choices the reader is offered look appealing and plausible, and often the precise answer turns on a master point of view rather than any hard and fast "rule." The authors do not, however, claim that theirs is the only possible interpretation of the tracings and data which appear here: polysomnogram interpretation is an art as well as a science. It is also stressed that the terms "correct" and "incorrect," which accompany each case in this volume, refer to a specific expert author's interpretation of the polysomnogram displayed in the clinical setting in which it was created. The reader may well have an explanation that differs from the author's as presented here, and to the extent that it is a rational and justified interpretation, this volume will have done its job: encouraging expert and refined consideration and analysis of vital aspects of polysomnography.

Because we have stressed the reader's ability to form her/his own interpretation of the polysomnogram tracing in the context of the case, we have not provided a traditional format of topics and chapters. Rather, we have arranged cases in alphabetical order of the first author and have provided a table of contents with a short title for each case history. In this way, we expect that as the reader works through a specific authors' cases and polysomnogram examples (arranged in alphabetical order), she/he will come to the cases and polysomnogram examples with the challenge of the interpretation intact, without a prior knowledge regarding whether the case primarily depicts a respiratory, cardiac, neurologic, circadian, or parasomnia disorder, although there will be certain natural clustering of cases from some authors. The reader will also be able to consult the index to pursue a specific type of abnormality if she/he prefers that style of working through these cases.

The reader is encouraged to form her/his own answer prior to checking the authors' interpretation of correct and incorrect answers, which appear in the second part of the book (pp. 137–206).

The interpretations and clinical suggestions herein are strictly the opinion of the authors; such interpretations may not necessarily apply to a specific patient of the reader's, and the intent here is expressly not treatment but polysomnogram interpretation, although it is important that the context of the interpretation be fully understood and accounted for.

Further, this volume is not specifically designed as a "board review" of sleep medicine. Nevertheless, it is expected that the reader who is able to work through the correct and incorrect interpretations of the polysomnograms displayed in these cases in a thorough and reasoned fashion will have gone far in attaining important and relevant expertise in all of these aspects of sleep medicine, and should be able to bring enhanced and indeed commanding skills to any examination situation, as well as to the interpretation of polysomnograms in her/his own practice.

I thank each of the authors, who contributed their expertise, time, and devotion to teaching and polysomnographic reasoning to create this volume, and the publishers, particularly Jane Seakins and Nicholas Dunton, whose insight, collaboration, and hard work was invaluable in bringing this text to the form in front of you.

We welcome your comments and suggestions regarding this format and the topics and interpretations herein. Good interpretation, and good health to your patients.

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FURTHER READING

American Academy of Sleep Medicine. *International Classification of Sleep Disorders, Diagnostic and Coding Manual*, 2nd edn. Westchester, IL: American Academy of Sleep Medicine, 2005.

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Abbreviations

A1	left mastoid (ear) referential EEG
A2	right mastoid (ear) referential EEG
Abd/Abdo (ABD, ABDO, ABDOMEN, ABDM, Abdm8)	abdominal respiratory inductance plethysmography
AHI	apnea hypopnea index
AASM	American Academy of Sleep Medicine
AV	atrioventricular
BMI	body mass index
C2 (C2-M, C2-A)	right central referential EEG
C3 (C3-M, C3-A)	left central referential EEG
C4 (C4-M, C4-A)	right central referential EEG
CFLOW	airflow derived from pressure signal
CHEST	thoracic respiratory inductance plethysmography
Chest/Abd	thoracic and abdominal respiratory inductance plethysmography
Chin, CHN	submental EMG
CO2 wave	end-tidal partial pressure CO_2 ($ETco_2$)
COPD	chronic obstructive pulmonary disease
CPAP	continuous positive airway pressure
CPRESS	positive airway pressure signal (positive deflection upwards)
Cz-Oz	midline central, occipital EEG
E1 (E1-M)	left referential EOG
E2 (E2-M)	right referential EOG
ECG/EKG	electrocardiogram
ECGL-ECGR	precordial ECG
EEG	electroencephalography/ electroencephalogram
EMG Tib	right and left leg EMG
EMG	electromyography/ electromyogram
EOG	electro-oculography/electro-oculogram
EPAP	expiratory positive airway pressure
$ETco_2$	end-tidal partial pressure CO_2
F3 (F3-M, F3-A)	left frontal referential EEG
F4 (F4-M, F4-A)	right frontal referential EEG
FLOW	airflow derived from pressure signal
Fz-Cz	midline frontal, central EEG
HR	heart rate
ICSD	International Classification of Sleep Disorders
IPAP	inspiratory positive airway pressure
L Leg (LLEG, Lleg)	left pretibial EMG
LAT	left anterior tibialis EMG
LEOG	left eye referential EOG
LOC	left eye referential EOG
MRI	magnetic resonance imaging
MSLT	multiple sleep latency test
MWT	maintenance of wakefulness test
N/O	oronasal thermistor
NAF	nasal pressure transducer
Nasal Press (NPress, Nasal P)	nasal pressure transducer
NPRE	nasal pressure transducer
NREM	non-rapid eye movement
O1 (O1-M, O1-A)	left occipital referential EEG
O2 (O2-M, O2-A)	right occipital referential EEG
OSA	obstructive sleep apnea
OSAT	O_2 saturation by oximetry (Spo_2)
$Paco_2$	partial pressure of CO_2 arterial
Pao_2	partial pressure of O_2 arterial
PAP flow	airflow derived from pressure signal
PAP	positive airway pressure
PFlow (PFLOW, PFLO)	nasal air pressure transducer
PLM	periodic limb movement
PSG	polysomnography/ polysomnogram
PTAF	nasal pressure transducer
Pulse	pulse rate from pulse oximetry
R Leg (RLEG, Rleg)	right pretibial EMG
RAT	right anterior tibialis EMG
RBD	REM sleep behavior disorder
REM	rapid eye movement
RERA	respiratory effort-related arousal
REOG	right eye referential EOG
ROC	right eye referential EOG
RLS	restless leg syndrome

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Snore (SNORE, Snore5, PSnore, SNOR)	snoring channel
Sono	snoring channel
SOREM	sleep-onset REM sleep
Spo_2 (Sao_2)	O_2 saturation by oximetry
SSRI	selective serotonin reuptake inhibitor
Sum (sum, SUM)	summation of abdominal and thoracic respiratory inductance plethysmography
$TCco_2$	transcutaneous CO_2
Therm (THERM, Therm6)	airflow via oronasal thermistor
Tho (THO, THOR, Thorax7)	thoracic respiratory inductance plethysmography

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