WHAT DO I DO NOW?

NEUROGENETICS

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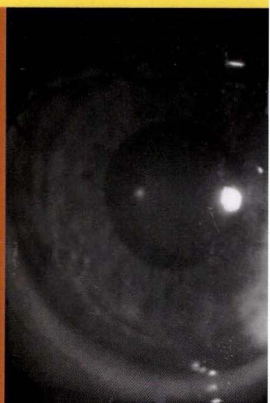

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Neurogenetics

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"This really is a brilliant book which I strongly recommend. Neurogenetics can be daunting for clinicians, but the authors have produced a highly readable, up-to-date and authoritative guide. Each chapter begins with a description of an actual clinical case, and moves on to discussion of differential diagnosis and whether, when and how to proceed with genetic testing. A must for all neurologists!"

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"The field of neurogenetics seems to be advancing at light speed. Genetic causes of well-described disorders as well as newly recognized syndromes are being discovered weekly. The clinician is regularly faced with the question "What do I do now?" with little idea of where to turn. Here, Drs. Kumar, Sue, Münchau, and Klein provide a case-based, easily-digested, yet remarkably thorough and authoritative approach to lead the overwhelmed clinician out of the wilderness."

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Preface

The field of neurogenetics may prove to be quite complex and challenging for many clinicians. This is compounded by the fact that the field is developing at a rapid pace. Technological advances such as next-generation sequencing have meant that new disease-causing genes are being identified on a regular basis. It is imperative that health practitioners keep abreast of these issues and have a sound approach to dealing with these disorders.

In this book, we discuss the clinical assessment, diagnosis, molecular genetic testing, and counselling of neurogenetic conditions. The case-based format is to make the subject as clinically relevant, succinct, and engaging as possible. As authors, we have an extensive experience in the clinical and research aspects of these disorders. We bring this experience to bear by presenting a diverse range of cases that are all based on actual patients, all of whom have been seen by ourselves or our colleagues in the clinics.

We hope this book serves you well as a tool for deciphering the complexity of neurogenetic disorders.

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PROFESSOR ALEXANDER MÜNCHAU

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PROFESSOR CHRISTINE KLEIN

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Glossary of Abbreviations

aCGH	Array comparative genomic hybridization
AD	Autosomal dominant
ADC	Apparent diffusion coefficient
ADCA	Autosomal dominant cerebellar ataxia
ALP	Alkaline phosphatase
ALS	Amyotrophic lateral sclerosis
AR	Autosomal recessive
ARSACS	Autosomal recessive ataxia of Charlevoix-Saguenay
BFIS	Benign familial infantile seizures
BHC	Benign hereditary chorea
BPAN	Beta-propeller protein-associated neurodegeneration
CJD	Creutzfeldt-Jakob disease
CK	Creatine kinase
CMT	Charcot-Marie-Tooth
CMTX	X-linked Charcot-Marie-Tooth disease
C9ORF72	Chromosome 9 open reading frame 72
COX	Cytochrome c oxidase
CSF	Cerebrospinal fluid
CT	Computerized tomography
DNA	Deoxyribonucleic acid
DRD	Dopa-responsive dystonia
DRPLA	Dentatorubral-pallidoluysian atrophy
DSD	Dejerine–Sottas disease
DTCGT	Direct-to-consumer genetic testing
ECG	Electrocardiogram
EEG	Electroencephalography
EMG	Electromyography
EPM2A	Epilepsy, progressive myoclonic type 2A
EOPD	Early onset Parkinson disease
FA	Friedreich ataxia
FAHN	Fatty acid hydroxylase-associated neurodegeneration
FLAIR	Fluid attenuated inversion recovery

FSHD	Facioscapulohumeral dystrophy
FTD	Frontotemporal dementia
GBA	Glucocerebrosidase
GCHI	GTP-cyclohydrolase I
GI	Gastrointestinal
GLUT1	Glucose transporter type 1
GPi	Globus pallidus internus
GSS	Gerstmann-Sträussler-Scheinker
HD	Huntington disease
HDL1	Huntington disease-like 1
HMSN	Hereditary motor and sensory neuropathy
HNPP	Hereditary neuropathy with liability to pressure palsies
HSP	Hereditary spastic paraplegia
HSV	Herpes simplex virus
IBMPFD	Inclusion body myopathy with Paget disease of bone and/or frontotemporal dementia
ICCA	Infantile convulsions and choreoathetosis
INAD	Infantile neuroaxonal dystrophy
iPD	Idiopathic Parkinson disease
LHON	Leber hereditary optic neuropathy
MD	Myoclonus-dystonia
MECP2	Methyl-CpG-binding-protein 2
MELAS	Mitochondrial encephalomyopathy, lactic acidosis, and stroke-like episodes
MERRF	Myoclonus epilepsy with ragged red fibers
MLPA	Multiplex ligation-dependent probe amplification
MNGIE	Mitochondrial, neurogastrointestinal encephalopathy
MoCA	Montreal Cognitive Assessment
MPAN	Mitochondrial membrane protein-associated neurodegeneration
MRI	Magnetic resonance imaging
MRS	Magnetic resonance spectroscopy
MS	Multiple sclerosis
m/s	Meters per second
mtDNA	Mitochondrial deoxyribonucleic acid
NBIA	Neurodegeneration with brain iron accumulation

NF1	Neurofibromatosis type 1
PAS	Periodic acid–Schiff
PCR	Polymerase chain reaction
PD	Parkinson disease
PED	Paroxysmal exertion-induced dyskinesia
PEG	Percutaneous gastrostomy
PEO	Progressive external ophthalmoplegia
PKAN	Pantothenate kinase-associated neurodegeneration
PKD	Paroxysmal kinesigenic dyskinesia
PNKD	Paroxysmal non-kinesigenic dyskinesias
PRNP	Prion protein (gene symbol)
PROMM	Proximal myotonic myopathy
PrP	Prion protein
PRRT2	Proline-rich transmembrane protein 2
qPCR	Quantitative polymerase chain reaction
SCA	Spinocerebellar ataxia
SDH	Succinate dehydrogenase
SENDA	Static encephalopathy with neurodegeneration in adulthood
SEP	Somatosensory evoked potential
SGCE	Epsilon sarcoglycan
SNAP	Sensory nerve action potential
SSPE	Subacute sclerosing panencephalitis
TDP-43	TAR DNA binding protein-43
TH	Tyrosine Hydroxylase
TOR1A	TorsinA
TPN	Total parenteral nutrition
TYMP	Thymidine phosphorylase
UPDRS	Unified Parkinson's Disease Rating Scale
VCP	Valosin-containing protein
VEP	Visually evoked potential
VIM	Ventral intermediate
VOR	Vestibular ocular reflex
WBBS	Whole body bone scan

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