

Contents

	Frontispiece	iii–iv
	Preface	xv
1	The concept of status epilepticus and its history	1
	Pre-history of status epilepticus	1
	Origins of status epilepticus	2
	Classical descriptions of status epilepticus	4
	Era of electroencephalography	13
	Les Colloques de Marseille, and the definition and classification of status epilepticus	14
	<i>Notes</i>	17
2	Definition, classification and frequency of status epilepticus	21
	Definition of status epilepticus	21
	Classification of status epilepticus	23
	A new classification of status epilepticus	25
	Frequency of status epilepticus	27
	<i>Status epilepticus as a proportion of hospital admissions</i>	28
	<i>Status epilepticus as a proportion of all epileptic cases</i>	28
	<i>The timing of status epilepticus</i>	28
	<i>Factors influencing the frequency of tonic–clonic status epilepticus</i>	29
	Population estimates of the frequency of status epilepticus	30
3	Clinical forms of status epilepticus	34
	<i>Status epilepticus confined to the neonatal period</i>	34
	Neonatal status epilepticus	34
	<i>Frequency</i>	34
	<i>Definition</i>	35

Contents

<i>Clinical forms</i>	35
<i>Electroencephalography</i>	37
<i>Causes</i>	39
Status epilepticus in neonatal epilepsy syndromes	40
<i>Early infantile epileptic encephalopathy</i>	40
<i>Neonatal myoclonic encephalopathy</i>	40
<i>Benign familial neonatal seizures</i>	41
<i>Benign neonatal convulsions</i>	41
<i>Status epilepticus confined largely to infancy and childhood</i>	41
Infantile spasm (West syndrome)	42
<i>Frequency and clinical form</i>	43
<i>Electroencephalography</i>	43
<i>Causes</i>	44
Febrile status epilepticus	45
Status in childhood myoclonic epilepsies	46
<i>Cryptogenic and symptomatic childhood myoclonic epilepsies</i>	46
<i>Syndrome of severe myoclonic epilepsy in infants</i>	46
<i>Syndrome of myoclonic status epilepticus in nonprogressive encephalopathy</i>	47
<i>Syndrome of myoclonic–astatic epilepsy</i>	47
Status epilepticus in the benign childhood epilepsy syndromes	48
<i>Benign rolandic epilepsy (benign epilepsy of childhood with rolandic spikes)</i>	48
<i>Benign occipital epilepsy</i>	48
Electrical status epilepticus during slow wave sleep	49
Syndrome of acquired epileptic aphasia (Landau–Kleffner or Worster–Drought syndrome)	51
<i>Status epilepticus occurring in late childhood and adult life</i>	53
Tonic–clonic status epilepticus	53
<i>Clinical features</i>	53
<i>Electroencephalography</i>	61
<i>Causes</i>	66
Absence status epilepticus	76
<i>Distinction between typical and atypical absence status epilepticus and other nosological problems</i>	76
<i>Frequency and clinical features</i>	79
<i>Electroencephalography</i>	82
<i>Cause</i>	83
Epilepsia partialis continua	84
<i>Russian descriptions (Russian spring–summer encephalitis)</i>	85
<i>Canadian descriptions (Rasmussen’s chronic encephalitis)</i>	85
<i>Evidence for a cortical or subcortical origin, and the differentiation from myoclonus</i>	86
<i>EPC as focal motor epilepsy</i>	91
<i>Clinical and electroencephalographic features of EPC</i>	94
<i>Causes</i>	95
Myoclonic status epilepticus in coma	98
Specific forms of status epilepticus in mental retardation	100
<i>Lennox–Gastaut syndrome</i>	101

Contents

	<i>Forms of status epilepticus in the Lennox–Gastaut syndrome and other types of mental retardation</i>	103
	Other syndromes of myoclonic status epilepticus	109
	<i>Myoclonic status epilepticus in primary generalised epilepsy</i>	109
	<i>Status epilepticus in the progressive myoclonic epilepsies</i>	109
	Nonconvulsive simple partial status epilepticus	110
	Complex partial status epilepticus	116
	<i>Definition and subclassification of complex partial status epilepticus</i>	116
	<i>Clinical features</i>	118
	<i>Electroencephalography</i>	127
	<i>Anatomical site</i>	128
	<i>Causes</i>	129
	Boundary conditions	130
	<i>Electrographic status epilepticus with subtle clinical signs</i>	130
	<i>Prolonged postictal confusional states</i>	131
	<i>Epileptic behavioural disturbances and psychosis</i>	131
	<i>Status epilepticus confined to adult life</i>	135
	<i>De novo absence status epilepticus of late onset</i>	135
	<i>Pseudostatus epilepticus</i>	137
4	Neurophysiology, neuropathology and neurochemistry of status epilepticus	139
	Experimental neurophysiology of status epilepticus	140
	<i>Initiation of seizure activity in status epilepticus</i>	140
	<i>Spread and maintenance of seizure activity in status epilepticus</i>	141
	<i>Termination of status epilepticus</i>	149
	<i>Cerebral energy in status epilepticus</i>	150
	Neuropathology of status epilepticus	151
	<i>Neuropathological changes in status epilepticus: cause or effect?</i>	152
	<i>Human pathological studies</i>	152
	<i>Animal pathological studies</i>	158
	Neurochemistry of status epilepticus	165
	<i>Inhibitory mechanisms</i>	167
	<i>Excitatory mechanisms</i>	168
5	Emergency treatment of status epilepticus	175
	<i>General measures</i>	175
	<i>Cardiorespiratory function and resuscitation</i>	176
	<i>Patient monitoring</i>	177
	<i>Intravenous lines</i>	177
	<i>Emergency investigations</i>	177
	<i>Intravenous glucose and thiamine</i>	177
	<i>Acidosis</i>	178

Contents

<i>Aetiology</i>	178
<i>Pressor therapy</i>	178
<i>Other physiological changes and medical complications</i>	179
<i>Seizure and electroencephalographic monitoring</i>	180
<i>Intracranial pressure monitoring and cerebral oedema</i>	182
<i>Antiepileptic drug pharmacokinetics in status epilepticus</i>	183
Drug absorption	183
<i>Route of administration</i>	183
Drug distribution, metabolism and excretion	185
<i>Blood–brain barrier, lipid solubility and ionisation</i>	185
<i>Distribution of drugs and half-lives</i>	186
<i>Apparent volume of distribution</i>	190
<i>Clearance</i>	192
<i>Loading dose</i>	192
<i>Hepatic metabolism</i>	192
<i>Active metabolites</i>	193
<i>Excretion</i>	193
Blood levels and interactions	194
<i>Relation of blood level to activity</i>	194
<i>Drug interactions</i>	194
<i>Ideal antiepileptic drug in tonic–clonic status epilepticus</i>	195
<i>Physical characteristics</i>	195
<i>Side-effects and selectivity of pharmacological action</i>	195
<i>Pharmacokinetics</i>	196
<i>Antiepileptic action</i>	197
<i>Stages of drug treatment in tonic–clonic status epilepticus, and drug treatment regimens</i>	198
<i>Premonitory stage</i>	198
<i>Stage of early status epilepticus (0–30 minutes)</i>	198
<i>Stage of established status epilepticus (30–60 or 90 minutes)</i>	201
<i>Stage of refractory status epilepticus (after 60 or 90 minutes)</i>	201
<i>Long-term maintenance antiepileptic therapy</i>	202
<i>Failure of antiepileptic drug treatment</i>	202
<i>Antiepileptic drugs used in status epilepticus</i>	203
Premonitory status epilepticus	203
Diazepam	203
<i>Absorption</i>	204
<i>Distribution</i>	205
<i>Biotransformation and excretion</i>	207
<i>Clinical effect in status epilepticus</i>	207
<i>Toxic effects in status epilepticus</i>	209
<i>Administration and dosage in status epilepticus</i>	211
<i>Summary of use in status epilepticus</i>	212
Midazolam	213
<i>Absorption</i>	214
<i>Distribution</i>	214
<i>Biotransformation and excretion</i>	214
<i>Clinical effect in status epilepticus</i>	214

Contents

	<i>Toxic effects in status epilepticus</i>	215
	<i>Administration and dosage in status epilepticus</i>	217
	<i>Summary of use in status epilepticus</i>	217
Paraldehyde		218
	<i>Absorption</i>	218
	<i>Distribution</i>	219
	<i>Biotransformation and excretion</i>	219
	<i>Clinical effect in status epilepticus</i>	219
	<i>Toxic effects in status epilepticus</i>	220
	<i>Administration and dosage in status epilepticus</i>	221
	<i>Summary of use in status epilepticus</i>	223
Early and established status epilepticus		223
Chlormethiazole (chlomethiazole)		224
	<i>Absorption</i>	224
	<i>Distribution</i>	224
	<i>Biotransformation and excretion</i>	225
	<i>Clinical effect in status epilepticus</i>	226
	<i>Toxic effects in status epilepticus</i>	228
	<i>Administration and dosage in status epilepticus</i>	229
	<i>Summary of use in status epilepticus</i>	230
Clonazepam		230
	<i>Absorption</i>	231
	<i>Distribution</i>	231
	<i>Biotransformation and excretion</i>	232
	<i>Clinical effect in status epilepticus</i>	232
	<i>Toxic effects in status epilepticus</i>	233
	<i>Administration and dosage in status epilepticus</i>	234
	<i>Summary of use in status epilepticus</i>	234
Lignocaine (lidocaine)		235
	<i>Pharmacokinetics</i>	235
	<i>Clinical effect in status epilepticus</i>	236
	<i>Toxic effects in status epilepticus</i>	237
	<i>Administration and dosage in status epilepticus</i>	237
	<i>Summary of use in status epilepticus</i>	237
Lorazepam		238
	<i>Absorption</i>	239
	<i>Distribution</i>	239
	<i>Biotransformation and excretion</i>	241
	<i>Clinical effect in status epilepticus</i>	241
	<i>Toxic effects in status epilepticus</i>	243
	<i>Administration and dosage in status epilepticus</i>	243
	<i>Summary of use in status epilepticus</i>	243
Phenytoin		244
	<i>Absorption</i>	245
	<i>Distribution</i>	245
	<i>Biotransformation and excretion</i>	249
	<i>Clinical effect in status epilepticus</i>	250
	<i>Toxic effects in status epilepticus</i>	251

Contents

<i>Administration and dosage in status epilepticus</i>	252
<i>Summary of use in status epilepticus</i>	253
Phenobarbitone (phenobarbital)	254
<i>Absorption</i>	255
<i>Distribution</i>	255
<i>Biotransformation and excretion</i>	257
<i>Clinical effect in status epilepticus</i>	258
<i>Toxic effects in status epilepticus</i>	260
<i>Administration and dosage in status epilepticus</i>	260
<i>Summary of use in status epilepticus</i>	261
Stage of refractory status epilepticus: general anaesthesia	262
Thiopentone sodium (thiopental sodium)	262
<i>Absorption</i>	263
<i>Distribution</i>	263
<i>Biotransformation and excretion</i>	264
<i>Clinical effect in status epilepticus</i>	265
<i>Toxic effects in status epilepticus</i>	266
<i>Administration and dosage in status epilepticus</i>	267
<i>Summary of use in status epilepticus</i>	267
Pentobarbitone sodium (pentobarbital sodium)	269
<i>Pharmacokinetics</i>	269
<i>Clinical and toxic effects in status epilepticus</i>	270
<i>Administration and dosage in status epilepticus</i>	273
<i>Summary of use in status epilepticus</i>	274
Isoflurane	274
<i>Pharmacokinetics</i>	275
<i>Clinical effect in status epilepticus</i>	275
<i>Toxic effects in status epilepticus</i>	276
<i>Administration and dosage in status epilepticus</i>	277
<i>Summary of use in status epilepticus</i>	277
Etomidate	279
<i>Pharmacokinetics</i>	279
<i>Clinical effect in status epilepticus</i>	279
<i>Toxic effects in status epilepticus</i>	280
<i>Administration and dosage in status epilepticus</i>	281
<i>Summary of use in status epilepticus</i>	282
Propofol	282
<i>Pharmacokinetics</i>	282
<i>Clinical effect in status epilepticus</i>	283
<i>Toxic effects in status epilepticus</i>	283
<i>Administration and dosage in status epilepticus</i>	284
<i>Summary of use in status epilepticus</i>	285
Other drugs used in status epilepticus	285
<i>Emergency treatment of other forms of status epilepticus</i>	287
<i>Neonatal status epilepticus</i>	288
<i>Status epilepticus in neonatal epilepsy syndromes</i>	288
<i>Infantile spasm (West syndrome)</i>	288
<i>Febrile status epilepticus</i>	288

	<i>Contents</i>
<i>Status epilepticus in childhood myoclonic syndromes</i>	289
<i>Status epilepticus in benign childhood epilepsy syndromes</i>	289
<i>Electrical status epilepticus during slow wave sleep and the syndrome of acquired epileptic aphasia</i>	289
<i>Absence status epilepticus and de novo absence status epilepticus of late onset</i>	290
<i>Epilepsia partialis continua</i>	290
<i>Myoclonic status epilepticus in coma</i>	290
<i>Specific forms of status epilepticus in mental retardation</i>	291
<i>Other forms of myoclonic status epilepticus</i>	291
<i>Nonconvulsive simple partial status epilepticus</i>	291
<i>Complex partial status epilepticus and boundary syndromes</i>	291
Prologue to therapy in status epilepticus	292
6 Prognosis and outcome of status epilepticus	293
Outcome of tonic–clonic status epilepticus (including generic studies of status epilepticus)	293
<i>Mortality and morbidity statistics from early series</i>	293
<i>Recent studies of mortality</i>	294
<i>Recent studies of morbidity</i>	298
<i>Factors influencing outcome</i>	300
Outcome of other syndromes of status epilepticus	301
<i>Neonatal status epilepticus</i>	301
<i>Status epilepticus in neonatal epilepsy syndromes</i>	303
<i>Infantile spasm (West syndrome)</i>	303
<i>Febrile status epilepticus</i>	304
<i>Status epilepticus in the childhood myoclonic epilepsies</i>	306
<i>Status epilepticus in benign childhood epilepsy syndromes</i>	306
<i>Electrical status epilepticus during slow wave sleep</i>	307
<i>Syndrome of acquired epileptic aphasia</i>	307
<i>Absence status epilepticus</i>	308
<i>Epilepsia partialis continua</i>	308
<i>Myoclonic status epilepticus in coma</i>	309
<i>Specific forms of status epilepticus in mental retardation</i>	309
<i>Other syndromes of myoclonic status epilepticus</i>	310
<i>Nonconvulsive simple partial status epilepticus</i>	310
<i>Complex partial status epilepticus</i>	311
<i>De novo absence status epilepticus of late onset</i>	311
References	313
Index	365