

Recent Modalities in Cerebral Monitoring During Anesthesia

Essay

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List of Abbreviations

^{133}Xe	: Radioactive Xenon
AC	: Alternating current
ADP	: Adenosine diphosphate
ADVO ₂	: Arteriovenous content difference in oxygen
AMLR	: Auditory middle latency response
ASA	: American society of anesthesia
ASSR	: Auditory steady state response
ATP	: Adenosine triphosphate
BAEP	: Brainstem auditory evoked potential
BIS	: Bispectral index
BRL	: Brain research laboratories
CABG	: Coronary artery bypass grafting
CBF	: Cerebral blood flow
CBV	: Cerebral blood volume
CMR	: Cerebral metabolic rate
CNS	: Central nervous system
CO ₂	: Carbon dioxide
CPB	: Cardiopulmonary bypass
CPP	: Cerebral perfusion pressure
CSA	: Compressed spectral array
CSF	: Cerebrospinal fluid
CSI	: Cerebral state index
CSM	: Cerebral state monitor
CT	: Computerized tomography
CVR	: Cerebral vascular resistance
CytO ₂	: Cytochrome oxidase
DSA	: Density spectral array
ECoG	: Electrocorticography
EEG	: Electroencephalogram
EICA	: Extracranial internal carotid artery
EMG	: Electromyography
EPs	: Evoked potentials
F	: Frequency shift

List of Abbreviations (Cont.)

FEMG	: Facial electromyography
fTCD	: Functional transcranial Doppler
FV	: Flow velocity
Hb	: Deoxygenated haemoglobin
HbO ₂	: Oxygenated haemoglobin
HITs	: High intensity signals
ICP	: Intracranial pressure
ICU	: Intensive care unit
IJV	: Internal jugular vein
LDF	: Laser Doppler flowmetry
LED	: Light emitting diode
MAC	: Minimal alveolar concentration
MAP	: Mean arterial pressure
MCA _v	: Middle cerebral artery flow velocity
MEP	: Motor evoked potential
MRI	: Magnetic resonance imaging
MRS	: Magnetic resonance spectroscopy
N ₂ O	: Nitrous oxide
NAD	: Nicotinamide adenine dinucleotide
NADH	: Reduced nicotinamide adenine dinucleotide
NIH	: National institute of health
NIRS	: Near infrared spectroscopy
NP	: Neuropsychiatric
NSE	: Neuron specific enolase
OR	: Operating room
PaCO ₂	: Arterial carbon dioxide tension
PACU	: Post anesthesia care unit
PbtO ₂	: Brain tissue oxygen tension
PET	: Positron emission tomography
PI	: Pulsatility index
PjVO ₂	: Jugular bulb venous oxygen tension
PSI	: Patient state index
QEEG	: Quantitative electroencephalogram

List of Abbreviations (Cont.)

rCBF	: Regional cerebral blood flow
RE	: Response entropy
RFA	: Retinal fluorescein angiography
rSO ₂	: Regional cerebral oxygenation
SCADs	: Small capillary and arteriolar dilatations
ScO ₂	: Cerebral saturation of oxygen
SE	: State entropy
SEF	: Spectral edge frequency
SEPs	: Sensory evoked potentials
SFx	: Spectral frequency indices
SJO ₂	: Jugular bulb oxygen saturation
SJVO ₂	: Jugular venous oxygen saturation
SSEP	: Somatosensory evoked potential
TCD	: Transcranial Doppler
TCeMEP	: Transcranial electric motor evoked potential
TEE	: Transeosophageal echocardiography
VEP	: Visual evoked potential
V _{mca}	: Middle cerebral artery flow velocity
V _{mean}	: Mean blood flow velocity
VPL	: Ventral posterior lateral nucleus of thalamus

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الجديد في المراقبة الدماغية أثناء التخدير

رسالة توطئة للحصول على درجة الماجستير في التخدير

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الملخص العربي

إن المرضى الذين يخضعون للعمليات الجراحية المختلفة هم عرضة لدمور الجهاز العصبي المركزي بسبب نقص الامداد الدموى أو الأكسجين. ربما يكون هذا الخطر متصل بأحداث لها صلة بديناميكية الجهاز الدورى أو انقطاع الامداد الدموى المصاحب لعمليات جراحية غير عصبية (مثال: مرضى الضيق الشديد بالشريان الثباتى الخاضعين لاستخدام جهاز القلب الصناعى) أو قد يكون الخطر متأصل في إجراء الجراحة العصبية نفسها (مثال: الاغلاق المؤقت للشريان المغذى أثناء جراحة الشرايين الدماغية الممتدة)

هذه الحقيقة جعلت من توافر المعلومات المباشرة في الوقت المناسب حول آثار الجراحة في وظيفة الجهاز العصبي ، ومدى كفاية إمدادات الدم له مسألة في غاية الأهمية وأثارت الانتباه إلى أهمية الرصد الدماغى للعمليات الجراحية المختلفة أثناء التخدير.

عموما فإن الدماغ يمكن رصده من حيث :

١. الوظيفة: من خلال دراسة التغيرات في النشاط الكهربى للقشرة الدماغية أو دراسة النشاط الكهربائى على طول الممرات الحسية أو الحركية التي تعكس استجابة المخ والسلامة الوظيفية لمختلف الممرات الحسية والحركية للمواد التخديرية المختلفة أثناء مختلف العمليات الجراحية.
٢. تدفق الدم: اعتمادا على الكثير من الطرائق التي لكل منها مزاياه وعيوبه بالنسبة لكفاءتها في اظهار التغيرات فى التدفق العام و المنطقى للدم

استجابة للعوامل التخديرية المختلفة أثناء العمليات الجراحية المختلفة و تأثيرها على إدارة ونتائج مثل هذه التغييرات.

٣. **الأوكسجين الدماغى:** والتي لها تأثيرها على التوقيت المناسب للتدخل كلما ضعف الأوكسجين فى الدماغ أثناء العمليات الجراحية المختلفة

٤. **الأيض الدماغى:** وهو ما يعكس حالة الأيض الدماغ تحت تأثير التخدير.

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