

운동기능과 정신장애

- 정신분열병을 중심으로 -

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Motor Function and Neuropsychiatric Disorders - With a Focus on Schizophrenia -

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ABSTRACT

Many disorders in neuropsychiatric field demonstrate variable motor disturbances as their clinical feature or in their courses of illness and also due to psychopharmacological treatment. Although association of such motor disturbances with the pathophysiological aspect of various neuropsychiatric illness are still lacking, some form of motor disturbance offer a window through which pathophysiologic mechanism of such illnesses can be viewed.

Cognitive control of motor functions are briefly reviewed in this article and the importance and method of motor function assessment in major neuropsychiatric disorders are also discussed.

Motor dysfunction of major neuropsychiatric illness such as schizophrenia and mood disorders may offer a chance of a deeper understanding on the pathophysiologic aspect of their clinical presentation.

KEY WORDS : Motor function · Schizophrenia · Mood disorders.

서 론

가

가

가

가

가

(tardive dyskinesia)가

가 (

)가

운동기능의 인지적 조절과 신경해부학적 고찰

가

supramodal executive dysfunction

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alternating hand movement

motor pattern

가

(Heilman

Rothi 1993).

area 4, 6
neocortex

3. 기저핵과 운동기능

area 6
(dorsal thalamus) ventral lateral nucleus(VL)
VL (basal ganglia)

(thalamus)

(supplementary motor area)

putamen

putamen

globus pallidus

(inhibitory synapse)

VL

(thalamocortical connection)

(excitatory)

supplementary motor area

discharge

1. 운동 피질

central sulcus

area 4 precentral gyrus

area 6

area 4(M1)

. Area 6

supplementary motor area(SMA)

premotor area(PMA)

SMA distal motor

unit innervate

PMA

proximal motor unit

Cortex

Striatum

Globus pallidus

VL

Cortex

(SMA)

innervate reticulospinal neuron

2. 측두엽 후위 피질(posterior parietal cortex)과 전전두엽 피질(prefrontal cortex)

가

osensory),

(proprioceptive),

(visual)

(somat -

가

가

area 5

area 3, 1, 2

area 7

(substantia ni -

gra)

nergic activation

motor coordination

globus pallidus

activation

VL

(subthalamic nucleus)

SMA

(hyperkinesia)

(chorea, ballism)

4. 소뇌의 기능

10%

(neuron) 50%

가

folia lobule

(lateral cerebellum)

(sensorimotor cortex) layer V

pyramidal cell

area 4, 6,

corti -

(ar - copontocerebellar projection

ventral lateral nucleus(VLc)

ea 8), area 6, area 4

PET

motor cortex

area 6

supplementary

(intent)가

motor area

1

primary motor cortex

Haaland 1991).

운동기능의 평가

가 (localization) Thompson (1987) 가 finger tapping test pegboard (Kimura 1979).

2. 손의 기민성(dexterity)과 근력(strength)

1. 실행증(失行症)검사를 통한 운동기능 평가

가 Luria 가 rapid finger sequence() hand sequencing(fist-edgepalm), (Le Gall 1990). 1) 손가락 두드리기(Finger Tapping Test : Halstead 1947 ; Reitan과 Wolfson 1993) Halstead Reitan 가 10 5 가 10 50 가 44 가 (Harrington Bornstein(1986) 55 70

Table 1. Activites for examining practice functions

	Use of Objects	Symbolic Gestures	Other
Face(Buccofacial)	Blow out match Suck on straw	Stick out tongue Blow a kiss	Whistle Show teeth
Upper Limb	Use toothbrush Hammer nail Cut paper Flip coin	Salute Hitchhike "OK" sign "Stop" sign	Snap fingers Touch ear with index finger Hold up thumb and little finger Make a fist
Lower Limb	Kick ball Put out cigarette		
Whole Body	Swing baseball bat Sweep with broom	Bow Stand like a boxer	Stand(or sit) Turn around
Serial Acts(can be done in pantomime or with real objects)	Preparing a letter for mailing(fold letter, put in envelope, seal and stamp envelop)		

31 32, 21 26 .), (aversion, negativism, mutism, gegenhalten (Cummings 1985).

(Bernard 1989). 가 , (grimacing),

가 (Ruff Parker 1993). mmings 1985 ; Marsden 1975). (Cu -

가

2) Grooved Pegboard(Matthews와 Kloeve 1964)

(catatonia)

가 ,

가 . 5 x 5

가 catatonic phenomena

가

subcortical axis 가

frontolimbic - (Cummings 1985).

(Matthews Haaland 1979)

가

가

가 (Ruff Parker 1993).

정신분열병에서의 운동장애

2. 정신분열병에서의 안구운동

Diefendor Dodge(1908)가 visual pursuit

saccades burst, (blinking pattern) (Cohen 1949 ; Schechter 1986).

1) 추적장애

(pursuit movement)

125ms

가

가

(latency) 30 50 /

가

PPRF(pontine paramedian

가

reticular formation)

(EOM) . Holzman (1973) 1 meter 20

2

1. 정신분열병에서의 자발적 운동장애

(outer canthi) EOG sine rapid sacc - adic movement가 , sine wave pattern

(goal directed) , amplitude inconsistency가

(stereotypy)

impaired eye tracking

(ec - , IQ

holalia), (echopraxia), mitmachen(), mitgehen(

1979), secobarbital, ethanol, chloral hydrate, lithium (Pivik

(Holzman 1987 ; Levy 1985) PET SPECT field supplementary motor area, (Fox 1985).

, CT ventricular enlargement가 가 (Weinberger Wyatt 1982), frontal eye field superior colliculus frontal eye fields projection caudate nucleus, superior colliculus caudate substantia nigra, dorsolateral prefrontal cortex (Weinberger 1986).

2) 안구 추적운동에 대한 유전적 연구

70% first degree relative 40 55% 7% (Holzman 1987).

first degree relative (Shagass

Schwartz 1965).

trait dependent,

(Karson 1988).

3) 눈깜빡임(Eye blinking)

가 가 (Brezinova Kendell 1977), (Levy 1985).

progressive supranuclear palsy

blinking,

staring, extraocular movement

blinking rate가 가

cortical modulation

, D₂ agonist blinking 가 가

D₂ blocker blinking 가

3. 신경학적 연성증후(Neurologic soft sign)

Table 2. Categories of soft neurologic signs

1. Developmental motor functions
 - (a) Items which assess speed and coordination of simple intentional movements along with the inhibition of unintended (associated) movements
 - () Alternating movements of tongue, hands and fingers, or feet
 - () Maintenance of fixed posture without instability ; e.g., holding extended arms supine and fingers spread, no pronation or choreiform movements, no imperistence
 - () Balance : Romberg's sign, hopping on one foot
 - () Gait : balance plus inhibition of associated movements plus coordination
 - Heel and toe-walking : varus and valgus walking
 - Tandem walking
 - () Sitting quietly
 - () Mouth opening, finger-spreading
 - (b) Persistence of primitive reflexes
 - () Babinski reflexes
 - () Grasp reflexes
 - () Tonic neck reflexes, changes in motor tone or posture
 - () Palmomentary reflexes
2. Tests of motor system symmetry
 - (a) Deep tendon reflex symmetry
 - () Lateral
 - () Upper versus lower extremities
 - (b) Motor strength and tone symmetry
 - (c) Facial symmetry
 - (d) Oculomotor symmetry
 - (e) Body part (skeletal) size symmetry
3. Laterality(hand, foot, eye preference) measures
 - (a) Inconsistency of laterality and motor dexterity
 - (b) Inconsistency of eye, hand, and foot preference
4. Cortical functions
 - (a) Sensory
 - () Stereognosis
 - () Graphesthesia
 - () Two-point discrimination
 - () Extinction to visual or tactile double simultaneous stimulation
 - () Cutaneous localization
 - () Matching patterns across sensory modalities
 - (b) Spatial orientation
 - () Left-right confusion
 - () Finger gnosis
 - (c) Language functions
 - () Stuttering, dysarthria
 - () Dysphasia
 - () Dysgraphia
 - () Dyslexia
 - () Dyscalculia
 - () Constructional apraxia
 - (d) Motor functions
 - () Alternating motor sequences
 - () Tests of skilled motor programs
 - () Facial praxis
 - () Motor persistence

(Table 2).

60 90%

가 가

(Kinney

1986)

(Joseph O'Leary 1986),

가

emotional tone emotional behavior

(Ross Rush 1981),

가

(Marsden 1982), (diencephalon) (brain stem) neurovegetative functioning

(Nasrallah 1982 ; Williams 1985).

(Brodal 1981)

정동장애와 운동기능의 이상

noradrenaline dopamine , ch-
olinergic , serotonergic , opioid GABA 가

Sutherland가

가

(Sutherland, 1861)

가

결 론

cata-

tonia bradykinesia,

가

(Waddington 1987).

40%

(Joffe 1987)

가

. Table 3

Table 3. Some diseases and pathophysiologies that can present with disorders of mood and movement

Parkinson's disease	Intoxication	Mental retardation
Huntington's disease	Extrapyramidal disorders	Autoimmune disorders
Wilson's disease	Head injury	Ataxias
Alzheimer's disease	Cerebellar disorder	Psychiatric disorders
Pick's disease	Hypothalamic disorders	Stoke
Fahr's disease	Encephalitis	Other dementias
Porphyria	Meningitis	Myopathy
Neurosyphilis	Toxic encephalopathy	Epilepsy
Slow virus infections	Metabolic encephalopathy	Migraine syndrome
Storage diseases	Delirium	Arousal disorders
Deficiency states	Demyelination	Attentional disorders

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