RULES FOR CORTICAL CONTROL OF CRANIAL NERVES

GENERAL RULE FOR CRANIAL NERVES

R MOTOR CORTEX

ALL RIGHT CRANIAL NERVES INCLUDING FACIAL N TO UPPER FACE BUT NOT TO LOWER FACE (or spinal accessory to sternomastoid)

"BILATERAL"
(Contralateral & ipsilateral)

L MOTOR CORTEX

ALL LEFT CRANIAL NERVES INCLUDING FACIAL N TO UPPER FACE BUT NOT TO LOWER FACE (or spinal accessory to sternomastoid)
RULES FOR CORTICAL CONTROL OF CRANIAL NERVES

1st EXCEPTION - LOWER FACE

RIGHT FACIAL NERVE TO LOWER FACE

ALL RIGHT SIDED SPINAL NERVES
These are also shown as this is norm for them

"UNILATERAL"
(Contralateral)

RULES FOR CORTICAL CONTROL OF CRANIAL NERVES

2nd EXCEPTION - SPINAL ROOT OF ACCESSORY N
(Sternomastoid)

L MOTOR CORTEX

LEFT SPINAL ROOT OF ACCESSORY NERVE (C1-5) TO LEFT STERNOMASTOID

"UNILATERAL"
(Ipsilateral)
RULES FOR CORTICAL CONTROL OF CRANIAL NERVES

GENERAL RULE
FOR CRANIAL
NERVES

1st EXCEPTION -
LOWER FACE
(spinal nerves also shown as this is norm for them)

2nd EXCEPTION -
SPINAL ROOT
OF ACCESSORY N
(to sternomastoid)

"BILATERAL"
(CONTRALATERAL &
IPSILATERAL)

"UNILATERAL"
(CONTRALATERAL)

"UNILATERAL"
(IPSILATERAL)

TESTING FOR FACIAL NERVE ACTION IN A NORMAL PATIENT

3 functions are tested separately in turn:

First the patient is asked to raise his eyebrows

Then he is asked to screw up his eyes tightly

Last, he is asked to smile or show his teeth

ALL MOVEMENTS ARE NORMAL AND SYMMETRICAL
TESTING FOR FACIAL NERVE ACTION IN AN ABNORMAL PATIENT

3 functions are tested separately in turn:

First the patient is asked to raise his eyebrows

Then he is asked to screw up his eyes tightly

Last, he is asked to smile or show his teeth

ALL MOVEMENTS ARE MISSING IN THE RIGHT SIDE OF THE FACE INDICATING A "LOWER MOTOR LESION"

TESTING FOR FACIAL NERVE ACTION IN AN ABNORMAL PATIENT

3 functions are tested separately in turn:

First the patient is asked to raise his eyebrows

Then he is asked to screw up his eyes tightly

Last, he is asked to smile or show his teeth

MOVEMENTS OF UPPER FACE ARE NORMAL & SYMMETRICAL BUT NO MOVEMENT IN LOWER FACE INDICATES A "UPPER MOTOR LESION"
VII

WHY IS ONLY THE LOWER FACE AFFECTED IN A "STROKE"?
(upper motor neurone lesion)

NORMAL BILATERAL CONTROL OF UPPER FACE MUSCLES

Patient at rest before being asked to use any facial muscles
NORMAL BILATERAL CONTROL OF UPPER FACE MUSCLES

**RIGHT FACIAL NERVE TO UPPER FACE**

Patient is asked to
- Raise eyebrows
- Screw up eyes

Muscles of the upper face are working normally with control from both sides of the cortex (bilateral - ipsilateral and contralateral).

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UPPER MOTOR NEURONE (SUPRANUCLEAR) FACIAL NERVE LESION

**STROKE LEFT CORTEX!**

**RIGHT FACIAL NERVE TO UPPER FACE**

Patient is asked to
- Raise eyebrows
- Screw up eyes

Muscles of the upper face are working normally with control from right cortex (ipsilateral), unaffected by stroke.
Patient at rest before being asked to use any facial muscles

Patient is asked to
- Smile or show teeth

Muscles of the lower face are working normally as there is left cortical control (contralateral).
UPPER MOTOR NEURONE (SUPRANUCLEAR) FACIAL NERVE LESION

STROKE LEFT CORTEX!

Patient is asked to
- Smile or show teeth

Muscles of the lower face are not working normally as there is loss of the (only) left cortical control (contralateral).

SUMMARY

IN A LEFT SIDED STROKE:
- Muscles of the upper face are working normally as there is also right sided (ipsilateral) cortical control unaffected by stroke.
- Muscles of the lower right face are not working as control is unilateral, contralateral only from the left damaged cortex.
IDENTIFYING THE SITE OF THE PROBLEM WHEN THERE ARE SIGNS OF A FACIAL NERVE LESION

VII FACIAL NERVE

• MUSCLES OF FACIAL EXPRESSION
  • CARRIES PARASYMPATHETIC
  • QUITE A LOT OF TASTE
  • TINY BIT OF SENSATION (Ramsay-Hunt Syndrome)
Symptoms and signs related to site of lesion in VII

**DRY EYE**
Lacrimal gland via
Greater petrosal n

**LOSS OF TASTE**
Taste in anterior 2/3 tongue via
Chorda tympani

Facial n
Parasympathetic (in nervus intermedius)

Stylomastoid foramen with facial n emerging for
Muscles of facial expression

**HYPERACUSIS**
Symptoms and signs related to site of lesion in VII

- Loss of action of all muscles of facial expression
- Loss of taste in half of anterior 2/3 of tongue
- Hyperacusis - loss of stapedius
- Dry eye - lacrimal gland
- i.e. Loss of all fibres

Taste in anterior 2/3 tongue via Chorda tympani

Stylomastoid foramen with facial n emerging for Muscles of facial expression

Lacrimal gland via Greater petrosal n
Facial n
Parasympathetic (in nervus intermedius)

N to Stapedius