The Reaction Level Scale (RLS 85)

Manual and Guidelines

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Summary

The Reaction Level Scale (RLS 85) is a "coma scale" for the direct assessment of overall reaction level in patients with acute brain disorders. It is devised for reliable use even in the management of patients who are difficult to assess, such as intubated patients and patients with swollen eyelids. We here present the manual of the RLS 85 and the guidelines for its use. The underlying concepts as well as limitations are outlined. Condensed information of known reliability and validity is presented. A training scheme for presumed observers (doctors, nurses and assistant nurses) is outlined. It is suggested that users of the RLS 85 refer to these guidelines and in scientific reports clearly state any deviations from this present manual in order to facilitate valid comparisons between different studies and different groups of patients.

Keywords: Reaction Level Scale; guidelines; reliability; validity.

Introduction

The Reaction Level Scale (RLS 85) is an eight grade single line scale, designed for direct bedside assessment of overall responsiveness or "conscious level" in patients with acute brain disorders.

One important objective was to construct a scale by which even intubated patients and patients with swollen eyelids could be reliably assessed. In these situations the users of the Glasgow Coma Scale (GCS) encounter problems on practical as well as on theoretical grounds (cf.7, 26).

Two main problems had to be solved. The first problem was how to handle the definition of coma when dealing with intubated patients. The second problem was how to assess obtunded, lethargic patients and agitated, severely confused or delirious patients4 with the same single line scale. Our proposed solutions to these problems are important concepts of the Reaction Level Scale.

An earlier version, RLS 82 was presented in a pilot study22 1982. That study indicated that all intubated patients could be assessed and that the reliability (inter-observer agreement) was at least as good as that of GCS sum score. During 1983–1985 the RLS 85 was evolved on the basis of the RLS 82. The main objective was now to find a layout and a training scheme that allowed different members of the staff participating in the care of patients with acute brain disorders to perform reliable assessments with the scale after a short training period.

The manual of the RLS 85 was first published in this journal in 1986 and was discussed in relation to earlier and current "coma scaling"26. Later we were able to show that doctors, registered nurses and assistant nurses at four different neurosurgical departments in Scandinavia performed reliable assessments of each level of the RLS 85 on patients who had suffered head trauma or subarachnoid haemorrhage27. The items included in the definition of coma in the RLS 85 (see below) could all be reliably assessed.

The first section of this report presents the manual and the guidelines for use of the RLS 85. A decision tree is presented, which constitutes the short-hand logic of the RLS 85 system in clinical practice. These guidelines comprise our condensed experience of the practical use of the scale. The second section presents comments on these guidelines including assumptions concerning the patho-physiological and patho-psychological processes, which the scale is intended to measure. Finally the psychometric properties of the scale are outlined.
REACTION LEVEL SCALE, RLS 85

1 Alert.
No delay in response.

2 Drowsy or confused.
Responsive to light stimulation.
Light stimulation: Approaching the patient verbally or by touch.

3 Very drowsy or confused.
Responsive to strong stimulation.
Strong stimulation: Repeated loud verbal approach, shaking, or pain stimulation.

4 Unconscious.
Localizes but does not ward off pain.

5 Unconscious.
Withdrawing movements on pain stimulation.

6 Unconscious.
Stereotype flexion movements on pain stimulation.

7 Unconscious.
Stereotype extension movements on pain stimulation.

8 Unconscious.
No response to pain stimulation.

MENTALLY RESPONSIVE

1 Alert
Orientated

2 Light stimulation
Orientating eye movements

3 Strong stimulation
Obeying commands

MENTALLY RESPONSIVE OR NOT MENTALLY RESPONSIVE

UNCONSCIOUS

4 Localizes pain

5 Withdrawing movements

6 Stereotype flexion movements

7 Stereotype extension movements

8 No response to pain stimulation

MENTAL RESPONSIVENESS: Arousable. Performs at least one of the following functions: oral response with words -- orientating eye movements -- obeying commands -- warding off pain.

Orientating eye movements: Eye opening with eye contact and some attempt at orientating eye movements.

Obeying commands: At request the patient performs a specific movement, e.g. "Lift up your arms", "put out your tongue", "open and close your eyes".

Warding off pain: The patient localizes pain and makes an active attempt to remove the painful stimulus.

Unconscious: No mental response. Cannot perform any activity defined under mental responsiveness.

Localizes pain: The patient is examined lying on his back with arms resting along the side of his body. a) on retromandibular pain stimulation, the patient moves one hand above the chin level, b) on pain stimulation of the fingertips (nailbed) of one hand, the patient moves the other hand across the midline.

Withdrawing movements: a) on retromandibular pain stimulation, the patient turns away his face, or b) on pain stimulation of the fingertips (nailbed), the patient does not localize the pain stimulus but makes clear withdrawing movements.

Stereotype flexion movements: a) on retromandibular pain stimulation, or b) on pain stimulation of the fingertips (nailbed), the patient makes slow and mechanical flexion movements of elbows and wrists, but no localizing or withdrawing movements.

Stereotype extension movements: a) on retromandibular pain stimulation, or b) on pain stimulation of the fingertips (nailbed), the patient makes extension movements, straightening his arms or legs. N.B.: No flexion movement must be observed. If both flexion and extension movements occur the flexion movement, i.e. the best response will be recorded.

No response to pain stimulation: On repeated strong pain stimulation, retromandibular or fingertip, the patient does not respond with any movement of either arms, legs or face.