# PAIN MEASUREMENT FROM THE NEUROSURGICAL STANDPOINT

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SUMMARY — A selective review of the current methods of pain measurement and validation (psychophysical methods, verbal and analogical scales, psychological tests) is presented with emphasis on patient selection for surgical pain relief, and analysis of outcome. The identification of homogeneous groups of patients with clinical and research objectives is prevented by the lack of a reliable pain scale, based on the assessment of objective and comprehensive parameters. This obstacle seems to be inherent to the complex nature of human pain experience. Psychiatric examination has proved important to elucidate the operative indications, particularly in cases of non-malignant obscure neuralgias. The importance of separate validation of the pain compliant and the psychiatric assessment is stressed. A critical comment is made on Hitchcock's pain scale and Lindqvist's psychiatric classification of candidates for surgery.

**Sobre a mensurarão da dor de uma perspectiva neuroeirúrgica.**

**RESUMO — Comentário crítico sobre a seleção de pacientes com síndromes dolorosas crônicas para tratamento cirúrgico. A literatura sobre a mensuração da dor é vasta e os métodos de uso clínico corrente (escalas verbais e analógicas, métodos psieofísicos, testes psicológicos e estudo do comportamento não-verbal entre outros), proporcionam uma impressão subjetiva do fenômeno doloroso, baseando-se no relato do paciente, em seus tragos de personalidade e comportamento. A ausência de escala de dor fundamentada em parâmetros objetivos e abrangentes, a exemplo das escalas de coma, não permite que se estabeleçam grupos homogêneos de pacientes para comparação dos resultados. A escala de Hiteheoek representa um avanço nessa direção, sendo a dor classificada em 5 graus em função da necessidade de analgésicos para o seu controle: Grau I, ausência de dor; Grau II, dor infrequente, com alívio completo obtido por analgésicos fracos não-narcóticos; Grau III, dor freqüente, com alívio completo obtido por analgésicos fracos não-narcóticos; Grau IV, dor constante, com alívio completo obtido por analgésicos narcóticos potentes; Grau V, dor constante, com alívio incompleto obtido por analgésicos narcóticos potentes. Essa escala pode ser empregada por qualquer equipe cirúrgica com atuação na área, porém sua validade é muito limitada por ser unidimensional (parece-nos particularmente útil na gradação da dor neoplásica). Uma escala de uso mais amplo deverá ser necessariamente multiaxial. A importância do exame psiquiátrico na indicação operatória é destacado, em particular nos casos de doença não-maligna e de substrato anátomo-patológico insuficientemente conhecido. A classificação de Lindqvist para os candidatos a cirurgia correlaciona os diagnósticos anatômico e psiquiátrico, contribuindo no processo decisório: Grupo A, casos neurológicos sem componentes psiquiátricos; Grupo B, casos com desordens psíquicas mais ou menos evidentes, que são irrelevantes para a doença em questão ou secundárias a elas; os fatores psiquiátricos são graduados em leves (B 1), moderados (B 2) e severos (B 3); Grupo C, componentes psiquiátricos consideráveis, porém cuja importância é, no momento, incerta; Grupo J>, casos com desordens psíquicas que devem ser tratadas antes que se considere a conduta cirúrgica; Grupo E, casos nos quais *o* exame psiquiátrico demonstra que a cirurgia é desnecessária ou está contra-indicada.**

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Pain is currently defined as «an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage»**22.** Recognizably a private experience, we can individualize in the pain phenomenon a sensitive or discriminative event («nociception»), and an emotional one, both amenable to be individually approached, and influencing each other.

The pain syndromes most suitable for neurosurgical treatment are cancer pain, and trigeminal and vagoglossopharyngeal neuralgias. Other cases amenable to surgery are: post-traumatic neuralgias (phantom limb, spinal root avulsions, painful paraplegia, and peripheral nerve lesions), post-herpetic neuralgia, coccygodynia, and other post-operative neuralgias. The failed-back syndrome represents a particularly difficult issue in the decision-making process. Siegfried **24,25** has classified such syndromes into two categories: (a) somatogenic pain, which is generally responsive to opiates or to the interruption of ascending pain pathways; and (b) neurogenic pain, which is poorly affected by the methods above, and should better be treated by neurostimulation techniques.

Patients with psychiatric and maladaptative personality disorders may behave in a pattern of «doctor-shopping», ignoring opinions recommending a conservative management for their illnesses, until they are eventually selected for surgery by a physician. The problem of surgical pain relief is primarily the problem of patient selection. As surgeons, we handle with anatomical facts: we should not be allowed to intervene in the abscence of detectable evidence of anatomical deviations that require surgery, even when surgery is not primarily directed to the affected structure, as is frequently the case of functional neurosurgery. In the patient with a minimal but evident lesion, the validity of pain complaint and the finding of psychiatric components, if present, must be analyzed separately since both may co-exist in the same individual without a relation of cause and effect[9].

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I. **Verbal and analog rating scales**
   1. **Simple descriptive scale** 5,8,23,30
   2. **Present pain intensity** 18,19,30
   3. **Numerical rating scale** 5,8,23,30
   4. **Visual analog scale** 5,8,23,30

II. **Pain tolerance estimatives**
   1. **Libman's test** 1,16
   2. **Tourniquet paw ratio** 29
   3. **Event-related evoked brain potentials** 4

III. **Psychophysical methods**
   1. **Sensory decision theory** 5,6,30
   2. **Tursky pain perception profile** 31

IV. **Psychological tests and derivatives:**
   1. **Minnesota multiphasic personality inventory** 5,7,21,27,30
   2. **Mensana Clinic pain validity test (formerly called the Hendler Screening test for chronic pain, or the Mensana Clinic back pain test)**9,10
   3. **West Haven-Yale multidimensional pain inventory** 32
   4. **McGill pain questionnaire, and short-form MPQ** 18-20,27,30
   5. **Pain beliefs and perceptions inventory** 32
   6. **Comportamental methods** 5,12,14
   7. **Study of facial expression** 15

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*Tabela 1 — Some current clinical methods of pain measurement.*

The current clinical methods of pain measurement (some of which are listed in Table 1) rely upon the patient's self report, personality traits and behaviour; none of these methods is of proven validity for the chronic pain patient. Verbal, motor and autonomic responses, interalia, are observable events which have been object of quantitative analysis — one cannot equate such associated phenomena (although they are «measurable» ones) with «pain». With such means it is even possible to quantify pain behaviour, but not pain itself. The question of pain measurement involves also the unsolved problem of its mensurability **3.** Neurosurgery resents the lack of a reliable, feasible pain scale based on the assessment of objective and comprehensive parameters, in the same manner as the coma scales[2]. Such a scale would permit the identification of homogeneous groups of patients for both clinical and scientific purposes. Hitchcock's pain classification **u»26** into five grades in function of the patient's analgesic drug utilization for pain relief, represents an advance to this direction: — Grade I, complete pain relief; — Grade II, infrequent pain, with complete relief produced by weak non-narcotic analgesics; — Grade III, frequent pain with complete relief effected by weak non-narcotic analgesics; — Grade IV, constant pain with complete relief produced by strong narcotic analgesics; — Grade V, constant pain with incomplete relief with the administration of strong narcotic analgesics.

This scale is sufficiently feasible to be adopted by any surgical team dealing chronic pain management[2] **6.** Its limitations are obvious: taking medicines is part of the pain behaviour, and the unidimensionality of this scale oversimplifies the complex pain experiences. Maybe its coverage is enough on approaching cancer pain, but failed-back syndrome, e.g., requires a more comprehensive scale.

Psychiatric examination has proved important to make clear the indication for operation, particularly in cases of non-malignant chronic pain syndromes. The presence or abscence of psychiatric components, and whether they reinforce or weaken the operation, particularly in cases of non-malignant chronic pain syndromes. The presence after a painstaking battery of tests and interviews, should receive a final psychiatric impression in either ICD or DSM-III terminology. Indecision must not be concealed by an inprecise but well formulated report **1?;** if present, uncertainty must be clearly expressed and further examinations undertaken. The general appfoach of DSM-III is said to be descriptive, and it rarely attempts to explain why or how the disturbances come about, i.e. it is atheoretical regarding etiology **28.** The kind of information required by neurosurgeons is necessarily objective. Lindqvist[1]? has developed a neurosurgically-oriented classification of candidates for pain syndrome surgery; after all psychiatric diagnoses, if present, are established the patients are grouped into five classes. We think that this work should be more widely known:

Class A — Neurological cases without psychiatric components;

Class B — Cases with more or less marked psychic disorders, which are irrelevant to the patient's present illness or they are secondary to it. The psychic factors are graded as mild (B 1), moderate (B2) or severe (B3);

Class C — Considerable psychiatric components; uncertain whether of immediate significance;

Class D — Cases including psychic disorders which should be treated before operation is considered;

Class E — Cases where psychiatric examination has shown surgical intervention to be unnecessary or contraindicated.

Conclusion — Pain is no more construed as a simple, «sherringtonian» sensation. Self-reported cognitive judgements, emotional reactions, behaviour, personality and social factors, anatomical and physiological correlates may all be important issues for pain measurement and validation, especially when the proposed treatment is a «non-return» neuroablative procedure.

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