53 - ASSESSMENT OF BRAIN DAMAGE GRAVITY: LITERATURE RESEARCH

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INTRODUCTION

Traumatic brain injury (TBI) is a reflection of the history and evolution of human beings. Pavelqueires et al. (1997) report that this is a disease of the oldest man has been suffering, because between 3000 and 1600 BC (Feldman, GOODRICH, 1999).

However, it was from 1682 that the trauma began to be described as an important factor of death, taking an increasingly larger with the advance of humanity (MELO, SILVA, MOREIRA JUNIOR, 2004).

Given this context, it is important to define the ECA, considered by Time and Sousa (2005) as any anatomic or functional impairment that reaches the scalp, skull, meninges or brain. The authors add that the ECA is classified, according to its intensity as severe, moderate and mild, configured as a dynamic process, the consequences can persist and progress over time after the event.

With regard to mortality, this trauma is the main determinant in the population under the age of 45 years and is therefore defined by the World Health Organization (WHO) as an important public health problem (ARRUDA, GARCIA, 2000; MELO; OLIVEIRA FILHO, SILVA, 2005).

It is estimated to occur in the world a TBI every 15 seconds and five minutes one of these victims and another sequel to be permanent. It is observed that approximately 50% of deaths from traumatic causes are associated with this event which, more than 60% are the result of traffic accidents (TA's) (HORA, SOUSA, 2005, OLIVEIRA; PAROLIN; TEIXEIRA JUNIOR, 2007).

In Brazil, the TBI mortality did not differ from other countries in the world, once ranked third among the other lethal events. In addition to being produced by the TA's may be due to shallow water dives, assaults, falls and bullets of firearms (FEITOZA, FREITAS, SILVEIRA, 2004 MELO, SILVA, MOREIRA JUNIOR, 2004).

Given this reality, the assessment of severity of TBI with speed and accuracy, as well as the use of maneuvers to basic life support, on site, may represent the chance of survival for these patients (PAVELQUEIRES et al., 1997).

In this sense, the instrument used to assess the severity of TBI is the scale of the Glasgow Coma (GCS). This scale was developed in 1974 at the University of Glasgow, Scotland, by Teasdale and Jennett in order to standardize the clinical observations of patients with TBI (KOIZUMI, 2000).

The GCS evaluates the patient in the parameters of eye opening, best verbal and motor responses. For each item, there is a "score" as the type of response possible and the sum of each is obtained the total score. GCS scores, ranging from three (lowest score) to 15 (highest score). The mild TBI include subjects with a score of 13 to 15; moderate, with a score between 09 and 12, and seriously, those who had scores less than or equal to 08 (eight). (OLIVEIRA; PAROLIN; TEIXEIRA JUNIOR, 2007).

Thus, knowing the issues involving the ECA, we ask: how the scientific literature has focused on the Coma Scale Glasgow as an instrument to assess the severity of brain damage? Who is responsible for research with the GCS and in what situations? The GCS used alone is capable of measuring the severity of head trauma?

With these concerns and trying to understand them, we developed the following objectives: to identify the scientific literature published in the databases of the Virtual Health Library (VHL) and Bank of theses and dissertations at the University of Sao Paulo and has been used Coma Scale Glasgow to measure the severity of brain damage, identify the items examined, including the professionals who research on the use of GCS and in what situations, identify in the articles analyzed, the Scale of the Glasgow Coma used alone is capable of measure the severity of brain damage.

METHODOLOGY

This is a bibliographical research in the portal of the Virtual Health Library (BIREME) and the Latin American and Caribbean Health Sciences (LILACS), Scientific Electronic Library Online (SCIELO) Adolescent Health (PubMed) and Bank of theses and dissertations at the University of Sao Paulo.

Data were collected between June 30 and July 13, 2008 using the keywords: coma scale and Glasgow head and brain trauma (Glasgow Coma Scale and Craniocerebral Trauma), according to the classification of the descriptors in the Health Sciences (DECS).

In this study, we sought published literature in databases on line, all the articles and theses / dissertations that deal with the issue of patients suffering from brain damage, the scale of the Glasgow Coma been used for evaluation of trauma were published in the last 10 years (1998-2008), published in English, Portuguese and Spanish.

The data were categorized by using a structured form, covering issues consistent with the research proposal as a database, work that used the GCS, situations of use of GCS alone or combined with another instrument for the assessment of TCE.

RESULTS AND DISCUSSION

We identified 65 studies, 55 excluded due to appear in summary form and does not respond to our inquiry. PUBMED is a database with more articles (35), however the Scientific (06) showed a higher number of items consistent with our proposal. He was selected an article from three SCIELO and Dissertations. Therefore, we analyzed a total of 10 articles published in the databases mentioned. As the professionals who conducted the study, six were doctors and four nurses.

Given this reality, we emphasize that the wide applicability of the GCS is to improve communication among professionals in the health area, providing a standardized language, standardized by means of codes universally adopted (KOIZUMI; DICCINI, 2006). According to Roza (2004), the simplicity of this scale allows pre-hospital caregivers, nurses and doctors use to measure your score and check trends in neurological dysfunction. Thus, we emphasize the need for greater involvement of nurses in conducting research and application of GCS in their clinical practice.

For the situations for the use of GCS in the work surveyed, we observed that Oliveira (2008) used the GCS associated

with the Revised Trauma Scale (RTS) for the assessment of TCE and prediction of risk factors for death among motorcyclists victims of motorcycle accidents the city of Maringá. According to the author, scores ≤ 8 on the GCS, RTS <12, pulse and blood oxygen saturation changes were risk factors for death among motorcyclists.

Oliveira (2008) found that victims who had scores ≤ 8 points on the GCS, the scene of the event, were 21.52 times more likely to die compared to those with scores> 8. These results strengthen the importance of these physiological measures easily measured in the victims at the scene of the event. Salvarani (2006) also used the GCS associated with RTS to assess the severity of TBI in victims of TA's.

Silva e Sousa (2007) conducted a study in São Paulo, to identify, through the GCS scores, the most appropriate time to implement the test of amnesia called Galveston Orientation and Amnesia Test (GOAT) in patients with TBI. The study also aimed to examine relationships between the results obtained in the GCS and GOAT, to help in the understanding of the relationships between post-traumatic amnesia and altered consciousness.

Regarding the applicability, the test could be applied in patients with a GCS score greater than or equal to 12, but the end of post-traumatic amnesia was found in patients with GCS score 14. The authors observed a significant correlation between the GCS and the GOAT, but different forms of relationship between the end of the amnesia and changes in consciousness were observed (SILVA, SOUSA, 2007).

The victim's collaboration in implementing the test was only achieved in individuals who, on Best Motor Response of the GCS score reached six, that is, they were able to obey simple commands (SILVA, SOUSA, 2007).

In order to investigate the correlation between age, gender, GCS and CT data with the short-term mortality of TBI victims, Rocha (2006) conducted a prospective study of 451 patients with TBI admitted to the Emergency Room Dr. Armando Lages, in Maceió / AL. The variables related to mortality in univariate analysis were three scores on the GCS and the presence of CT abnormalities and subdural hematoma (HSD), subarachnoid hemorrhage (SAH), deletion / asymmetry of basal cisterns, midline deviation, edema, intraventricular haemorrhage (HIV), presence of shrapnel or projectile from a firearm. The low score on the GCS showed a linear correlation with mortality, that is, the lower the score on the GCS, the higher the mortality.

The predictors of mortality in multivariate analysis, values were low GCS, presence of tomographic and midline deviation and diffuse edema (ROCHA, 2006).

Other scholars have investigated the use of GCS alone for the assessment of TCE. From this perspective, Melo et al. (2006) conducted a study on medical records and reports from victims ECA 0 to 19 years of age in Salvador / BA, separately evaluating the use of GCS on admission. The results showed that 13% of victims did not report on the score of GCS, 15.4% had severe TBI, moderate TBI 7.7% and an absolute majority, 63.8% had mild head injuries. Melo, Silva and Moreira Junior (2004) also used the GCS alone and obtained similar results.

When it comes to studies of patients with initial diagnosis of mild TBI in 2005, the city of Camagüey in Cuba, was published a study of these victims and the results showed poor reliability in their outcome, when only the initial score of GCS. When analyzing the decline in initial GCS score with time, found that 5.5% of people who had been diagnosed with mild head injuries suffered in dimimuição initial GCS score and of these, 57.14% had initial GCS score of 13 and 35.71% GCS of 15 points (Hernández et al., 2005).

The authors found in their research, that 31.35% of the population had mild TBI underwent computed tomography (CT) and that of these, 75.98% had an abnormal CT scan. Moreover, 17.06% of patients with mild TBI underwent surgical procedures and 3.57% died (HERNÁNDEZ et al., 2005).

In this context, we bring to light a very common discussion on the use of GCS in patients with hindering situations such as endotracheal intubation / tracheostomy, sedation, and eyelid edema. Faced with this problem, Koizumi and Araújo (2005) quantified the underestimation in the total GCS, when using the score one, in situations of impediment to its evaluation. These researchers have proven statistically by linear regression from the scores in eye opening (AO) and best motor response (MRM), which in severe TBI, the GCS total score, setting the best verbal response (MRV) in one, although underestimated, is close to the real.

The authors add that the more unobtrusive situations are present, more reliable is the value between the observed score of GCS and GCS estimated by regression (KOIZUMI ARAÚJO, 2005).

When it comes to patients with severe TBI, Dantas Filho et al. (2004) demonstrated statistically in his research that the initial severity of TBI, as measured by GCS, significantly influence the outcome of the patients being shown that the initial clinical manifestation, as assessed by GCS, is a strong indicator of the severity of primary lesions and secondary TEC. The study also showed that the presence of cranial hypertension, hypoxia, hypotension, had a significant influence on the outcome.

CONCLUSION

We conclude that the scale of the Glasgow Coma is widely known and the most extensive quantitative measure, used to determine the level of consciousness after traumatic brain injury. The use of this scale in the assessment of TCE, both at the pre-hospital and in hospital care is one of the healthcare team, allowing to estimate the severity of TBI, as well as enabling early detection of any change in neurological function, and hence a redesign of the possible interventions to modify the current clinical picture.

In this review, we observed that most of the selected publications were indexed in LILACS and medical professionals were responsible for the publications related to the subject under study.

For the situations for the use of GCS alone or combined with other instruments, physiological indicators or technological devices for diagnostic purposes, we found that computed tomography (CT) and physiological indices such as the RTS were the most frequently used tools and had statistically significant. We note that some studies using only the GCS failed to prove its actual effectiveness in isolation, but other studies have found significant predictions and actual use when the GCS in patients with severe TBI.

We hope that the facts shown in this study encourage the health team to engage in the provision of initial care as much on the event and later, after hospital admission. We reiterate that, during the first treatment, professionals should assess the severity of trauma, using the GCS and the other indices mentioned in order to reduce so any further complications.

KEYWORDS: coma scale Glasgow, |Head and Brain Trauma, Severity Indices Trauma.

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ASSESSMENT OF BRAIN DAMAGE GRAVITY: LITERATURE RESEARCH

ABSTRACT

This is a work of literature review conducted on the website of the Virtual Health Library and Bank of theses and dissertations at the University of Sao Paulo. The objectives were to identify the scientific literature has been searched by the Scale of a Glasgow Coma Score (GCS) to measure the severity of traumatic brain injury (TBI), identified in the analyzed which professionals who research on the use of GCS and in which situations, identify articles published in the databases searched, the GCS is used alone is capable of measuring the severity of TBI. 65 studies were identified and selected 10. Most of the selected publications were indexed in LILACS and medical professionals were responsible for the publications related to the subject under study. We found that CT and physiological indices such as the RTS were the most common tools associated with the GCS and that had statistically significant results. We note that some studies using only the GCS failed to prove its real efficacy alone, but others have found significant predictions and actual use when the GCS in patients with severe TBI.

KEYWORDS: Coma Scale Glasgow, Craniocerebral Trauma, Severity Indices Trauma.

ÉVALUATION DE LA GRAVITÉ DU TRAUMATISME CRANIO-ENCÉPHALIQUE: RECHERCHE BIBLIOGRAPHIQUE

RÉSUMÉ

Il s'agit d'un travail de révision de littérature réalisé dans le Portal da Biblioteca Virtual em Saúde (Portail de la Bibliothèque Virtuelle en Santé), Banque de thèses et dissertations de l'Université de São Paulo dont voici les objectifs: identifier dans la littérature scientifique analysée comment l'Échelle de Coma de Glasgow (ECGl) est appliquée pour mesurer la gravité du traumatisme crânio-encéphalique (TCE); identifier dans les articles analysés quels professionnels mènent leurs recherches sur l'utilisation de l'ECGl et dans quelles situations; identifier dans les articles publiés dans les bases de données examinées si l'ECGl utilisée isolément é capable de mesurer la gravité du TCE. Nous parcourûmes soixante-cinq études et en sélectionnâmes dix. La plupart des publications sélectionnées étaient indexées dans la LILACS et les médecins professionnels furent les auteurs les plus importants des publications associées au thème dont il est question. Nous constatâmes que la tomographie informatisée et quelques índices physiologiques comme la RTS furent les plus fréquents des instruments associés à l'ECGl et ceux qui eurent des résultats statistiquement significatifs. Nous observâmes que quelques études qui utilisèrent seulement l'ECGl n'arrivèrent pas à prouver leur efficacité isolément, tandis que d'autres révélèrent des pronostics significatifs et expressifs dans l'analyse de l'ECGl appliquée aux patients portant un TCE grave.

MOTS CLÉS: Échelle de Coma de Glasgow, Trauma Cranio-cérébral, Índices de Gravité du Trauma.

EVALUACIÓN DE LA GRAVEDAD DEL TRAUMATISMO CRANEOENCEFÁLICO: INVESTIGACIÓN BIBLIOGRÁFICA

RESUMEN

Se trata de un trabajo de revisión de la literatura realizado en el Portal de la Biblioteca Virtual en Salud y el Banco de tesis y disertaciones de la Universidad de Sao Paulo. Los objetivos fueron: identificar en la literatura científica evaluada como

ha sido la utilización de la Escala de Coma de Glasgow (ECGI) para medir la gravedad del traumatismo cráneo encefálico (TCE); identificar en los artículos analizados cuales de los profesionales que investigan sobre la utilización de la ECGI y en que situaciones; identificar en los artículos publicados en las bases de datos evaluadas se la ECGI utilizada aisladamente es capaz de medir la gravedad del TCE. Fueron identificados 65 estudios, seleccionando diez. La mayoría de las publicaciones evaluadas estaban indexadas en la LILACS y los profesionales médicos fueron los principales responsables por las publicaciones relacionadas a la temática en estudio. Constatamos que la tomografía computarizada y los índices fisiológicos como el RTS fueron los instrumentos que con mayor frecuencia se asociaron a ECGI presentando resultados estadísticamente significativos. Observamos que, algunos estudios que utilizaron solamente la ECGI, no lograron comprobar su real eficacia aisladamente, no obstante otros autores constataron pronósticos significativos y reales, cuando se utilizó la ECGI en pacientes con TEC grave.

PALABRAS CLAVES: Escala de Glasgow, Trauma Cráneo-Cerebral, Índices de Gravedad de trauma.

AVALIAÇÃO DA GRAVIDADE DO TRAUMATISMO CRANIO ENCEFÁLICO: PESQUISA BIBLIOGRÁFICA

RESUMO

Trata-se de um trabalho de revisão de literatura realizado no Portal da Biblioteca Virtual em Saúde e Banco de teses e dissertações da Universidade de São Paulo. Os objetivos foram: identificar na literatura científica pesquisada como tem sido a utilização da Escala de Coma de Glasgow (ECGl) para medir a gravidade do traumatismo crânio encefálico (TCE); identificar nos artigos analisados quais os profissionais que pesquisam sobre a utilização da ECGl e em que situações; identificar, nos artigos publicados nas bases de dados pesquisadas, se a ECGl utilizada isoladamente é capaz de medir a gravidade do TCE. Foram identificados 65 estudos e selecionados 10. A maioria das publicações selecionadas estava indexada na LILACS e os profissionais médicos foram os principais responsáveis pelas publicações relacionadas à temática em estudo. Constatamos que a tomografia computadorizada e índices fisiológicos como a RTS foram os mais frequentes instrumentos associados à ECGl e que tiveram resultados estatisticamente significativos. Observamos que alguns estudos que utilizaram somente a ECGl, não conseguiram comprovar sua real eficácia isoladamente, mas outros constataram prognósticos significativos e reais, quando utilizado a ECGl em pacientes com TCE grave.

PALAVRAS CHAVE: Escala de Coma de Glasgow, Trauma Craniocerebral, Índices de Gravidade do Trauma.

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