

Accuracy of Allen Score in Predicting Stroke Type

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Abstract

Background: *Cerebrovascular Accident (CVA) or Stroke* is an emergency condition that makes the decrease of nerve function that is impacted by main nerve injury, therefore it can make the physic weakness moreover the move function will be disappear. Stroke is divided become iskemik and hemoragik. In determining stroke type, the most important is doing assessment by using *CT scan*. But, it has a resistance in the develop country that is influenced by the low economic. Thus, In determining the stroke type it needed the helping equipment as stroke score, one of stroke score that can be used is Allen score.

Purpose: This systematic review having an objective for knowing the accuration of Allen score in determining stroke type and providing treatment.

Method: Systematic review is begin by some stages, there are making questions and determining the objectives, after that finding the right key word to identify the searching data that suitable with the objective by using “AND” and “OR” method. The article analysis that is published in 2010 up to 2019 by using Pubmed, *Proquest and Science direct*. After using article data then doing the selection by using Prism flow chart and JBI critique tool.

Result and Discussion: The scoring system to the stroke patients is using Allen score that can help in determining stroke types, diagnose and as the basic giving care to the patient. After doing some analysis, Allen score has sensitivity, specific, positive prediction and negative prediction that is better used in determining iskemik stroke.

Conclusion: From some research result that has been done, shows that *Allen* score tent to have sensitivity, specification, and positive prediction for determining stroke type.

Keyword: *Score stroke, Allen score stroke, Allen or Guys Hospital score validity, validity of Allen score stroke*

Introduction

Cerebrovascular Accident (CVA) or stroke is an emergency condition that is signed by the decrease of nerve function so make the suffer unable to do their daily activities⁽¹⁾ stroke is a condition that threat the people life an need fast and right treatment. Thus can decrease disability and even death to the suffer. Stroke can be divided become two based on the cause, there are iskemik and hemorrhagic stroke. Ischemic stroke is caused by the disruption of blood supply to the brain., there is because of narrowing and blockage in the form of wad or emboli in artery to the brain. Hemorrhagic

stroke is caused by the breakage of rain blood vessel, because the really high blood pressure⁽²⁾.

Prevalence stroke in the world according to⁽³⁾ is 6,5 Million that caused detach and 25,7 million people is getting physic disability that make weakness of motion part body. The research data by ⁽⁴⁾ shows that in Southwest of Asia, Indonesia become the biggest stroke suffers. The stroke prevalence stroke in Indonesia is increase from 8.2 to 12.1 per 1000 people in 2013.⁽⁴⁾ This research did in⁽⁵⁾ shows that the high of disability is 62%-90,1% that caused by stroke is physic disability.

The physic change that rarely happen between them are motorist function⁽⁵⁾. The management of stroke is start from early examination and diagnostic examination appropriately, fast and right ⁽⁶⁾. The management of stroke is doing based on the type of stroke. The right early examination is able to prevent the worst condition that will be suffer by the patient. That condition can be disability even death ⁽⁷⁾.

The examination of kind of stroke can be held by using stroke scoring system. on of the stroke coring that have been implemented is *Allen* score⁽⁸⁾. *Allen* score or *Guys Hospitalscore* is stroke scoring that can be used to determined kinds of stroke that is suffered by the patient⁽⁹⁾. Stroke examination using *Allen* score is held because there are many reason. There are no available of CT scan examination, the difficult of transportation access And the high of cost. The obstacle can be influenced in determining diagnose in the medication that is given to the patient ⁽¹⁰⁾. The research that has been done by⁽¹¹⁾ about stroke scoring system shows that *Allen* score has good accuracy. The researcher said that high sensitivity is 94,54% and specify 80% in ischemic stroke while in hemorrhagic the sensitivity is 94,54% and the specify is 80%⁽¹¹⁾. The other result that held by Mwita,

Kajia, Gwer Etyang and Newton (2014) shows that *Allen* score has sensitivity and specify in ischemic stroke is 0,70 (95% CI 0.53-0.83) and 0.79 (95% CI 0.68-0.87), while in hemorrhagic stroke the sensitivity and specify is 0.54 (95% CI 0.42-0.66) dan 0.89 (95% CI 0.83-0.94). The objective of this study is to know how is the degree of the accuration in *Allen* scoring system in determining stroke type to the patient.

Method

The arrange of systematic review is consist by many stages. The first is determining the research question that is used PICOS method. The next stage Is collecting the data and literature for doing the review by using searching method “AND” and “OR” in each key. Analisis dilakukan dengan menggunakan data base Pubmed, Proquest dan Science direct. In the literature review stage is using diagram there are : The identification to literature, screening, the selection of the literature and the determining the criteria of inclusion and eksklusi. The last stage in the systematic review is doing in synthesis of literature to get the systematic review. Selection and document choosing by PRISMA diagrinn picture.¹

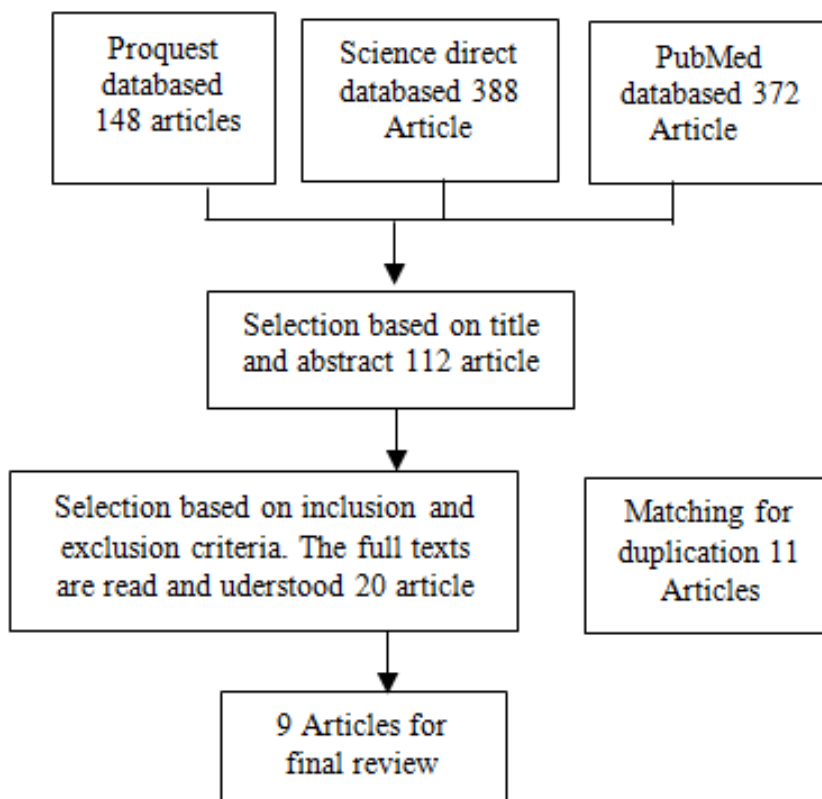


Figure 1. Framwork search systematic review adapted from Prisma

Result and Discussion

The results of several articles show that studies conducted on stroke patients get the results that Allen score have advantages in predicting ischemic stroke. Allen score has several characteristics that are use in assessing patients to predict the type of stroke. Observations were made on stroke patients use the characteristics of Allen score.

Stroke is a condition when the patient lost the neurology function that is caused by the disruption in main of nerve system and become the cause of death that rarely happen in the society⁽¹⁾. Stroke prevalence increases every year caused mortality and morbidity in whole the world. The stroke incident often happen in develop country and become the cause of highest disability⁽¹²⁾.

Stroke is divided become two type⁽¹³⁾. Ischemic stroke is a condition there is artery blood blockage that is caused blockage blood circulation to the brain⁽¹⁴⁾ while hemorrhagic is caused because of the break of blood nerve that is caused by high blood pressure⁽²⁾.

Stroke has big impact to the people life quality, where most of stroke patient getting the decrease of motorist function because of neurology disruption, so the patient unable to do their daily activities⁽¹⁵⁾. The physic change of the patient is a serious problem because it caused long term physic disability. Thus it need right and appropriate handling in stroke management⁽⁶⁾.

Stroke management consist of care that is given to the patient, start from early examination and diagnostic assessment. The appropriate early examination and diagnostic assessment is a accurate data source in determining the diagnostic, determining the type of stroke and giving the right and accurate therapy, so prevent the disability even death that often happen to the stroke patient⁽⁷⁾.

The early examination of stroke can be held by scoring system to help for determining the stroke type, diagnose and stroke management⁽⁶⁾. Scoring system can be held if there is no helping equipment *computerized tomography (CT) scan*⁽¹⁵⁾. There is no CT scan in some hospital caused the late of early examination to the patient so influence the right and appropriate handling⁽¹⁶⁾. Scoring system really helpful in determining the stroke type in unavailable CT scan hospital. One of the scoring system using *Allen*⁽¹⁷⁾.

Allen Scoring system is used by doing an observation when the patient is coming. The nurse doing some examination of aware level, plantar level, blood pressure, atheroma, hypertension, stroke attack before and heart sick and apoplectic onset that include vomit during 2 hours, leher kaku and headache⁽⁹⁾ A disruption of brain function cause other sign is appear for 6 up to 24 hours onset⁽¹⁸⁾. Allen score examination is held based on gained data from the signed by the patient, then it doing validity assessment to see the accuracy from that score.

Research conducted in several countries, showed that the Allen score has a high accuracy value to predict the type of ischemic stroke. The accuracy value can see from the sensitivity, specificity, positif predictive value and negative predictive value. Based on⁽¹⁸⁾research Allen score has 63% accuracy and 95% specify, the sensitivity said good if has 80% and better sensitivity 95. So, in this study, Allen score have not get good accuracy score in determining hemorrhagic strok, but this study shows that Allen score has a good score in determining ischemic stroke diagnose. That research same as⁽⁹⁾ research. That shows Allen score sensitivity level 38% for hemorrhagic stroke it means that less sensitive in determining hemorrhagic stroke.

The next clinically studies that has been held by Pandey R P⁽¹⁹⁾ the 100th patients who comes to the hospital with symptoms and stroke symptoms the stroke examination and observation is using Allen score. This research shows that Allen score the good sensitivity and the prediction of positive score (96,2% dan 91,22%) for examine type of ischemic stroke. But it has a different result with stroke type of hemorrhagic that has bad sensitivity and positive prediction (75% dan 88,23%)⁽¹⁹⁾.

Nouira, Boukef⁽²⁰⁾ in his research shows that when a patient with stroke and comes to the hospital it must be held the examination using Allen score for determining the type of stroke. The result shows that Allen score has sensitivity and specify 55% dan 70%, while for the negative prediction is 80%. From several research that has been done shows the same result that is the sensitivity, specify, negative prediction and positive prediction in Allen score is right for assessing the type of ischemic stroke, but the score result is influenced by the condition, sign and the symptoms that is suffers by the patients.

Stroke score can be said ideal for determining the type of stroke must be have the balance score in validity,

simplicity and the function, but Allen score is enough accurate for being used in epidemiology research⁽²¹⁾.

Caring continuous stroke management really depend on the kind of stroke, hemorrhagic or ischemic. The stroke scoring system is a clinically tools that able to help to prediction type stroke type has balancing in validity, simplicity, and the use. This stroke assessment become one of important tools for determining the diagnose and the examination that will be given to the patient. Beside that the determining of stroke type really useful to prevent the stroke attack⁽²²⁾. There is a mistake in determining the stroke diagnose cause postpone of caring system and inappropriate caring⁽²³⁾.

This stroke is a simple system that can be used to determine the stroke type. The knowledge about stroke and there is risk factor that can influence is dynamic things that can be changed later⁽²⁴⁾. There is a change that influence stroke score that must be revalidated in the assessment and the way to scoring to the patient based on the symptoms.

Conclusion

The successful of stroke management is depend on the determining the type of stroe that will be the key of giving the examination to the stroke patient. The helping score like scoring system can be help to determining the type of stroke whether hemorrhagic or ischemic. One of the example score that can be used is Allen score or Guys Hospital.

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