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Severity of Stroke in Men and Women in Patients Presenting With Acute Ischemic Stroke

Dr.S.Rama mani kumari
Dept of general medicine
Rangaraya medical college

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I. INTRODUCTION

- In an uncontrolled control population, women presenting with acute ischemic stroke patients present with worse functional outcomes than men.
- In general the gender differences have been attributed to several factors such as age, co-morbid factors, pre-stroke functional status and stroke severity.
- several studies have confirmed women have increased severity of stroke compared to men.
- This study investigates gender differences among stroke patients treated in GGH,Kakinada using specific risk factors that contribute to stroke severity.

II. METHODS

- The study was approved by ethics committee.
- The study included patients >21 years of age
- Patients presenting within 24 hrs of symptom onset.
- Patients with imaging evidence of acute ischemic stroke-imaging signs include loss of grey/white matter distinction,hypodensity,sulcal swelling or middle cerebral artery hyperdensity.
- The specific characteristics which determine stroke severity were collected, which include
- Atrial fibrillation/atrial flutter
- Coronary artery disease
- Carotid stenosis
- Diabetes
- Drug/alcohol use
- Dyslipidemia
- Family history of stroke
- Congestive heartvfailure
- Hypertension
- Obesity
- Prior stroke/prior TIA
- Prosthetic heart valve
- Peripheral vascular disease
- Chronic renal disease
- Sleep apnea
- History of smoking.
- Demographic variables include age,gender,BMI and baseline National institute of health stroke scale score[NIHSS]
- Baseline NIHSS score is a important predictor of severity of stroke.
- A score of>7 is associated with poor outcome.
- A score of <7 is associated with positive neurological outcome .

III. STATISTICAL ANALYSIS

- Analysis of differences in the frequency of categorical variables was done by X2 test
- student's t-test was used to evaluate continuous variables.
- In this study as the severity is compared in between men and women, it is determined that different demographic and risk factors were associated with NIHSS>7 or NIHSS<7 dependant on gender
- The binary logistic multivariate analyses were used to determine predictors of worsening neurological function or improving neurological function.
- Odd's ratio were used to predict the odds of worsening or improving neurological function for men or women based on risk factors and demographic factors.
- Stroke severity was based on NIHSS score stratification and the dependant variable.
- The demographic and risk factors for men and women were included as primary independent variables.
- The odd's of presenting with a worsening neurological function or improving function were analysed separately for men and women.
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Disease

Characteristi cs	Women NIHSS <7	Women NIHSS >7	Men NIHSS<7	Men NIHSS>7
Hypertensive medication	89	63	90	58
Diabetes medication	40	22	42	28
Total cholesterol	177	173	159	165
Vital signs				
Heart rate	78	85	74	76
Blood pressure				
systolic	143	148	148	150
diastolic	77	79	83	80
INR	1.02	1.08	1.03	1.11

IV. RESULTS

- A total of 454 acute ischemic stroke patients were taken and 233 were women while 221 were men.
- Women with an NIHSS score >7 were older and presented with higher rates of atrial fibrillation and heart failure, hypertension.
- Women with worsening neurological function has higher heart rate.
- Men with a NIHSS>7 were presented with higher rates of heart failure and hypertension and high international normalised ratio[INR].

CONTINUED….

- Women with increasing age and heart rate were associated with worsening neurological function, while direct admission was associated with improving neurological function.
- For men hypertension and high INR were associated with worsening neurological improvement.

V. DISCUSSION

- Three major results were obtained from this study
- 1]more women were presented with acute ischemic stroke.
- 2]increasing heart rate were associated with worsening neurological outcome in women.
- 3]hypertension and high INR were associated with worse neurological outcome in men.

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- The older women >80 yrs of age also have wide range of co-morbidities like coronary artery disease,hypertension,previous h/o of stroke/TIA .
- The outcome of stroke in women >80 yrs of age is worse and in that age group more women were admitted with acute ischemic stroke,this is due to women tend to live longer and risk of stroke increases with age and at the time of initial presentation the severity score was were which implies worse outcome of stroke.
- The identification of co-morbid factors which contributes to stroke severity and their management helps to improve the outcome of acute ischemic stroke patients in both men and women.
- This study assessed gender differences in stroke severity using comorbid factors and consistent with severity of stroke is greater in women>80 years of age.
- This study concludes that risk factors associated with stroke like hypertension , atrial fibrillation, diabetes mellitus , high cholesterol level are associated with gender differences are important modifiable risk factors.
- While smoking, alcohol,obesity are modifiable lifestyle risk factors.
- Women are more likely to present with hypertension, diabetes, obesity.
- Incontrast h/o heart disease, peripheral vascular disease, myocardial infarction, smoking,alcohol are more prevalent in men.
- Direct admission was also associated with improved outcome in both women and men and obesity was associated with better outcome in men.
- The association between obesity and improving neurological function similar to ischemic stroke, coronary artery disease, congestive heart failure.

VI. LIMITATIONS

- The data includes only patients presented with and admitted with acute ischemic stroke , so the dats doesn't include patients from remote areas and the data cannot represent all stroke patients.
- The data doesn't include pre stroke dependancy of the patient,post treatment NIHSS score,time from stroke onset to hospital admission.
- The stroke severity was based on initial NIHSS score

VII. CONCLUSION

- The study concluded significant gender differences in stroke severity, and older women with higher heart rate are more likely to have severe stroke.
- Gender is not an independent risk factor of stroke outcome but rather contributes to increased stroke severity in women.
- Therefore,elderly women with acute ischemic stroke patients are crucial population and should be assisted with managing their risk factors for better in hospitals.

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