



“A PROSPECTIVE STUDY ON THERAPEUTIC MANAGEMENT & OUTCOME MEASURES IN CARDIO EMBOLIC STROKE PATIENT AT DISCHARGE & FOLLOW- UP”

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Abstract: -

Introduction:

An embolism is a particle that moves from a source and blocks a blood vessel in the body. Cardiac sources of embolism may be rare, they can cause life-threatening effects such as stroke or heart attack. A cardiac embolism causes a blocked artery, which can affect blood flow. They are caused by a cardiac embolus that originates in the heart. A cardiac thrombus is a blood clot that forms in the heart and is called an embolism when it travels. Depending on where the blockage occurs, a person can experience different complications. For example: • A blockage in the heart's blood vessels can lead to a heart attack. • A blockage in the organs can lead to organ damage. • A blockage in the limbs can lead to a peripheral embolism. When a cardiac embolus makes its way into the brain, it causes a cardiac embolism which can cause an embolic stroke.

Aim: “A Prospective Study on Therapeutic Management & outcome measures in Cardio embolic stroke patient at discharge & Follow-Up”

Methods:-

This is a study design. This study was conducted over 6 months from 2022 to 2023 at a Tertiary hospital in an in-patient department. The individuals for whom the inclusion criteria are taken into consideration. The patients included according to their interests and willingness in order to carry out the study. The study was conducted in Tertiary Hospital in Guntur [multi-centered hospital]. The study will be carried out for a period of 6 months.

Results:

Based on gender, males are more affected with in the age group of 40-75, in our results out of 150 the thrombolytics were taken only by 25% of the patients, mostly the CES condition is seen in the patients having cardiac-related problems, the treatment

Conclusion:

The rarely diagnosed disease among cardiac-related problems inpatient department of Cardiology and neurology medicine department was found to be a cardioembolic stroke. The most commonly prescribed treatment for CES were TNK (thrombolytic treatment), antiplatelets, anticoagulants, and statins. From this study, we concluded that males (57%) have a high chance to get CES than females (43%). From the study, we conclude that the first line treatment given in CES is thrombolytic therapy, and antiplatelets and statins therapy shows a high impact on CES patients. People who have comorbid conditions like DM (60%) & HTN (69%) have a high chance to get CES from our study, and then neuroprotectants (46%), and anticoagulants (42%) can be given as second-line treatment.

Keywords:- Cardio Embolic Stroke, Neuroprotectants, Blockage, cardiac thrombus.

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1. INTRODUCTION

An embolism is a particle that moves from a source and blocks a blood vessel in the body. cardiac sources of embolism may be rare they can cause life-threatening effects such as stroke or heart attack.

A cardiac embolism causes a blocked artery, which can affect blood flow. They are caused by a cardiac embolus that originates in the heart. A cardiac thrombus is a blood clot that forms in the heart and is called an embolism when it travels.

2. EPIDEMIOLOGY:

- Cardioembolic strokes appear to occur more frequently with increasing age.
 - About 20% of strokes are considered to be cardioembolic. The risk of these strokes causes such as atrial fibrillation, valvular disease, MI, and intraventricular thrombus.
 - The incidence of cardioembolic stroke in the population could be about 30 cases per 100000 inhabitants per year.
 - The prevalence is between 5 and 10 cases per 1000 persons aged 65 years or older.
 - Hospital mortality is high and 5 years survival is only one out of every five patients.
 - Among, all atrial fibrillation plays a major role in cardioembolic stroke as an additional risk factor for future embolisms.
 - Prevalence of atrial fibrillation increases with age reaching a peak of 5% in people over 65 years of age.
 - Both its incidence and prevalence are increasing.
 - A total of 689 ischemic stroke patients were screened 156 had confirmed cardioembolic stroke. So, the frequency of cardioembolic stroke was 22.64%.
 - Male and Female ratio was 1.3:1, mean age of 63 years
 - HTN 119(76.3%)
 - Atrial fibrillation 107(68.6%)
 - IHD 40(25.6%)
- \Were most common comorbidities.
- Among 23(19.7%) patients with chronic rheumatic heart disease

3. ETIOLOGY

ATRIAL DISEASE:

Arrhythmias:

Atrial fibrillation, specifically non-valvular atrial fibrillation is believed to be the most prevalent cause of cardioembolic stroke.

- AF is the most common cause of cardioembolic stroke.

- Because the blood clots form in the left atrial appendage in the heart & travel to the brain

HEART FAILURE

This weakens the heart blood clots can form, as the heart is unable to pump blood to the body.

ATHEROSCLEROSIS

It is the build-up of fats and cholesterol in the artery walls. Plaque can build up and restrict the blood flow in the arteries. If the plaque ruptures the fat and cholesterol can travels to the body leading to a blood clot.

VASCULITIS

Causes the blood vessels to become inflamed. The clot can form when the platelets stick to the damaged blood vessels.

SYSTOLIC HEART FAILURE

This is where the left ventricle of the heart becomes weak and doesn't contract properly. People with systolic heart failure may have a higher risk of stroke.

PATENT FORAMEN OVALE:

Also known as a hole in the heart, patent foramen ovale may be present in approximately 40% of people who have a stroke without a known cause.

OTHER CAUSES:

There are several causes of embolism such rare causes are:

- Papillary fibroelstoma
- Myxoma
- Mitral classification

Each account for < 1% of cardioembolic strokes.

- High blood pressure
- Diabetes
- High cholesterol
- Smoking
- Viral infections
- Inflammatory conditions

- 4. PATHOPHYSIOLOGY:

As with any thrombus, the fundamental pathophysiology is vested within Virchow's triad. Stasis of blood, as occurs with ventricular akinesia or aneurysms, predisposes thrombus formation. Similarly, the lack of atrial contractility in atrial fibrillation results in an increased predisposition to clot formation, particularly in the left atrial appendage. These thrombi can either remain indolent and later undergo organization or embolizeto systemic circulation - stroke is a potential consequence.

With atrial fibrillation, this risk is greatest when converting a patient back to sinus rhythm. The endothelial injury that accompanies valvular lesions also predisposes to hypercoagulability and thrombus formation, with similar potential consequences.

- The cardiac emboli may consist of cholesterol, thrombus, platelet thrombi, calcium, or even bacterial clumps. Emboli from the heart can be distributed anywhere in the body, but more

than 80% migrate to the brain. Most of the emboli to the brain involve the anterior circulation, with only about 20% involving the vertebrobasilar circulation.

When emboli enter the brain, they not only obstruct blood flow but may become detached and migrate further distally. Thus, reperfusion is another form of injury

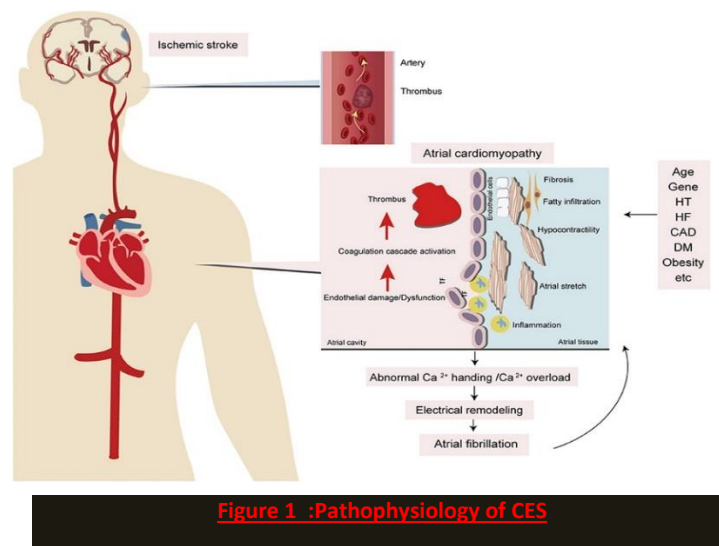


Figure 1 :Pathophysiology of CES

4. SIGNS & SYMPTOMS:

A stroke happens suddenly, often without warning.

- Numbness or weakness in the arm, leg, or face, often affecting one side of the body.
- Confusion
- Speaking difficulties (or) difficulty understanding speech.
- Vision difficulties in one (or) both eyes.
- Difficulties with walking, coordination, balance & dizziness.

Symptoms can depend on which artery is blocked. According to the American Heart Association (AHA) trusted source.

If a blood clot is present in the blood vessels around the heart, a person may experience

- Shortness of breath
- Discomfort in the arm, neck back (or) jaw
- Chest pain

A person may also experience:-

- Sweating
- Lightheaded ness
- Nausea

Essentially, the blood clot causes a heart attack by blocking the blood vessel that supplies blood to the heart.

A blood clot just sitting in the heart may not cause any symptoms.

If the blood clot has traveled to the carotid arteries & causes a cardioembolic stroke. Therefore, a person will experience the symptoms of a stroke.

OTHER SYMPTOMS INCLUDE:

- Blurred vision (or) blindness
- Dizziness
- Nausea
- Difficulty swallowing
- Sleepiness
- Chest pain

6. DIAGNOSIS:

Diagnostic criteria for cardioembolic stroke:

Two different brain imaging tests can be useful. Those are

CT scan

MRI scan.

The presence of embolism is suggested on CT or MRI

- Location and shape of the lesion
- hemorrhagic infarction
- presence of superficial wedge-shaped infarcts in multiple different vascular territories
- Visualization of thrombi within arteries

- Typically, hemorrhage occurs in proximal reperfused regions of brain infarcts.

TRANSESOPHAGEAL ECHOCARDIOGRAPHY:

- Better visualization of atria, cardiac valves, septal regions, and aorta.
- An ECHO-enhancing agent (such as agitated saline) can also help reveal an intracardiac shunt.

TRANSCRANIAL DOPPLER:

- Embolic particles passing under TCD probes produce transient, short-duration, high-intensity signals refer to as HITS.
- Monitoring of emboli with TCD may guide treatment decisions.

• ELECTROCARDIOGRAM:

- To measure the hearts activity
- If It shows abnormal heart rhythm such as atrial fibrillation then it indicates that the stroke could be embolic.
- 60% of all ischemic strokes are associated with AF.

BLOOD TESTS:

To assess for damage to the heart muscle.

CAROTID ULTRASOUND:

It is an imaging test that examines the inside of the carotid arteries.

MRS SCALE (MODIFIED RANKING SCALE):

0- no symptoms.

- 1- no significant disability. Able to carry out all usual activities, despite some symptoms.
- 2 - slight disability. able to look after own affairs without assistance but unable to carry out all previous activities.
- 3 - moderate disabilities, require some help, but is able to walk unassisted
- 4 - moderately severe disability. unable to attend to own bodily needs without assistance, or unable to walk unassisted
- 5 - severe disabilities. requires constant nursing care and attention bedridden, incontinent
- 6 – dead

THERAPY:

PHARMACOLOGICAL THERAPY:

The most effective treatment for cardioembolic stroke is a clot-busting drug, such as

TISSUE PLASMINOGEN ACTIVATOR (t-PA):

- ALTEPLASE {ACTIVASE}
- TENECTAPLASE {SUPRAPLASE}
- RETEPLASE {RETAVASE}
- It must be given within a few hours after stroke symptoms begin. Hence, it is important to seek emergency treatment immediately if you have stroke symptoms.
- TPA's are administered through an intravenous line (IV) into a vein. This medicine can dissolve clots and restore blood flow in the brain.

•ANTICOAGULANTS:

In cardioembolic stroke, these are used as secondary prevention.

- HEPARIN SODIUM {HEPED}
- NICOUMALONE {ACITROM}

ORAL ANTICOAGULANTS:

- APIXABAN {APIGAT}
- RIVAROXABAN {OAKRAXA}
- Anticoagulants started in the first 48 hrs v/s other treatment in acute cardioembolic stroke.
- Didn't show a significant reduction in recurrent stroke within 7-14 days with anticoagulation.
- Symptomatic intracranial bleeding was increased with early anticoagulation therapy.
- Anticoagulation should be started as soon as possible in patients with AF after brain imaging for a TIA.
- The major embolism rate without antithrombotic therapy was 4.0 % per year, 2.2% per year with antiplatelets, and 1.0 % per year with anticoagulants.
- Heparin followed by low-intensity oral anticoagulation reduced stroke by about 70% in the weeks following AMI.
- Long-term anticoagulation beyond three months is not justified unless other major cardiac embolic risk factors such as mural thrombosis are present.

ANTIPLATELET:

- ASPIRIN, 81- 325 mg daily, is recommended as an alternative to vitamin - k antagonists in low-risk patients.

SURGICAL APPROACHES:-

- ❖ Open Valvotomy
- ❖ Mitral Valve Replacement

PATENT FORAMEN OVALE:

Factors predicting stroke in PFO

- Younger Age.

- Association with an atrial septal aneurysm.
- Presence of right-to-left shunt at rest.
- Size of the PFO.
- Association with thrombophilic conditions.

PROSTHETIC VALVE:

- Thromboembolic 7 to 34 % per year without anticoagulant therapy and 1-5% per year with oral anticoagulants.

Risk factors for thromboembolism

- Kind of mechanical valve used, leaflet <monoleaflet and caged ball.
- AF.
- Left ventricular dysfunction.
- Spontaneous echocardiographic contrast.
- Increasing age.

METHODOLOGY

Source of data: Data will be collected from:

1. Case records of the patient's in the hospital.
2. Lab investigation reports of the patient in hospital.
3. By evaluating the patient interview collected from patients who presented with cardioembolic stroke.

Study Design:

The current study is a prospective study on therapeutic management & outcome measures in cardioembolic stroke

Study site:

The study is conducted in Lalitha Super Specialty Hospital.

Study duration:

The study will be carried out for a period of 6 months.

Study Design:

An observational prospective study.

Study Criteria:

The study will be carried out by considering the following criteria:

Research population:

A total of 150 patients were enrolled in the study who were diagnosed with cardioembolic stroke. Subjects are included in the study

Inclusion Criteria:

- Patient with an age group below 75 years.
- Both gender (male and female).

- Patients under go thrombolysis, LIAT.
- Patients with underlying cardiovascular diseases like paroxysmal atrial fibrillation (AF), rheumatic heart disease (RHD), and coronary artery disease (CAD).
- Patient with cardioembolic stroke

Exclusion Criteria:

- Patients who are above 75 years.
- Patient with hemorrhagic stroke.
- Pregnancy patients and lactating mothers.
- Patients who are not willing.

STUDY METHOD:

The study will be conducted at Lalitha Super Specialty Hospital after obtaining ethical clearance from the Institutional Ethical Committee. All the patients who come under inclusion criteria will be monitored and data will be collected during the respective study period

STUDY PROCEDURE: -

The study will be conducted at Lalitha Super Specialty Hospital after obtaining ethical clearance from the Institutional Ethical Committee.

STEP-1: A prospective and observational study was carried out in the hospital with prior permission from the inpatient department.

STEP-2: The patients visiting the department were enrolled in the study considering the study criteria after taking their consent to participate in the study.

STEP-3: From the enrolled patients, the data was collected from the case sheets, face-to-face interviews, phone calls, and other relevant resources in a suitably designed data collection form.

STEP-4: we conducted various educational programs for all patients and their attendees in the neurology department regarding therapeutic management & outcome measures of cardioembolic stroke.

DESIGN OF DATA COLLECTION FORM: -

Data collection was carried out through face-to-face interviews with patients, and phone calls. The information collected includes demographic data, past medical history of the patient's hypertension, diabetes, cardiac history, and symptoms like arm or leg weakness, and slurred speech at the time of admission of the patient in

the hospital after discharge, the patient was followed through the regular check-up and phone calls about quality of life. The data collection was pretested through a pilot study of 10 patients who were not included in the final analysis to check for the understandability and language clarity of questions, and all valid comments were taken into consideration by the principal researchers in the main survey.

STATISTICAL TOOL:

A Chi-square test was used to determine the association between therapeutic management and outcome measures. The statistical significance was set at 0.05.

Results:

A total of 150 patients were enrolled in the study. The data was taken from the patient who was during the 6 months duration

1. Distribution based on Gender

Tab-1 Distribution based on Gender

S.no	Gender	Number of patients (n=150)	percentage
1	Male	85	57%
2	female	65	43%

The tables shows the distribution based on the gender of the study populations out of 150 patients studied 57% were male and 43% were female.

Fig-2 Distribution based on Gender

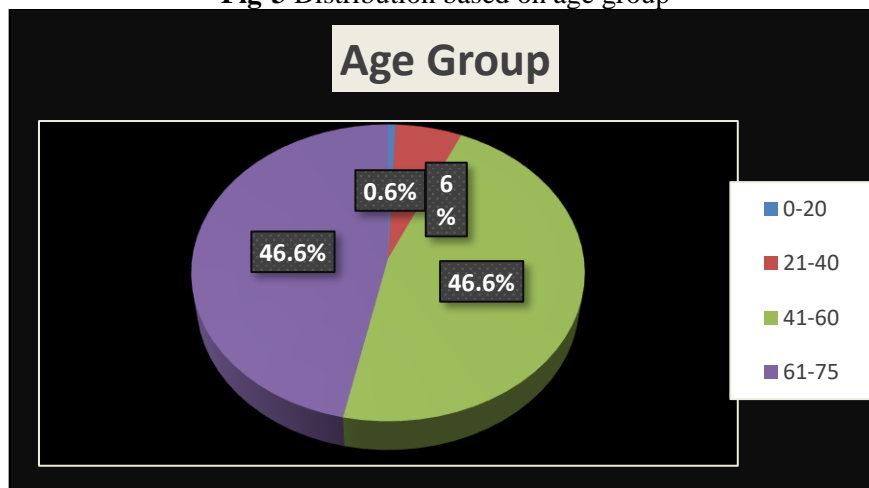
Distribution based on age group

Tab -2 Distribution based on age group

S.no	age	No of patients(n=150)	Percentage
1	0-20	1	0.6%
2	21-40	9	6%
3	41-60	70	46.66%
4	61-75	70	46.66%

The table shows the distribution based on the age group of the study population. Out of 150 patients, the age group of 0-20 were 1 (0.6%), 21-40 were 9 (6%), 41-60 were 70 (46.66%), and 61-75 were 70 (46.66%).

Fig-3 Distribution based on age group



2. Distribution based on thrombolysis [tNk/ agriblock] treatment

Tab -3 Distribution based on thrombolysis [tNk/agriblock] treatment

S.no	Thrombolysis	No of patients	Percentage
1	Yes	38	25.3%
2	No	112	74.6%

The table shows the distribution based on thrombolysis of the study population. Of 150 patients, 38 (25.3%) were treated with thrombolysis, and 112 (74.6%) were not.

Fig -4 Distribution based on thrombolysis [tNk/agriblock] treatment

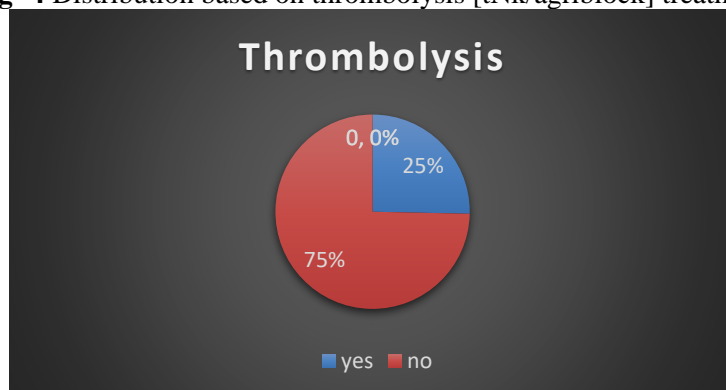
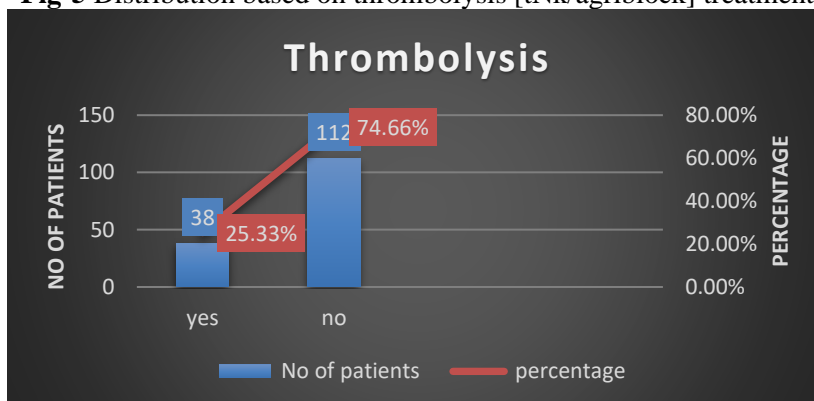


Fig-5 Distribution based on thrombolysis [tNk/agriblock] treatment



3.istribution based on Risk factors

Tab-4Distribution based on Risk factors

S.no	Risk factors	No of patients	Percentage
1	Alcohol	18	12%
2	smoker	20	13.33%
3	HTN	104	69.33%
4	DM	90	60%

The tables hows distribution based on risk of the studypopulationoutof150 patients104 (69.33%) are suffering from HTN, 90 (60%%) were suffering from DM, and 20(13.33%) outof150 were smokers, alcoholics were18(12%) out of 150 patients.

Fig -6 Distribution based on Risk factors

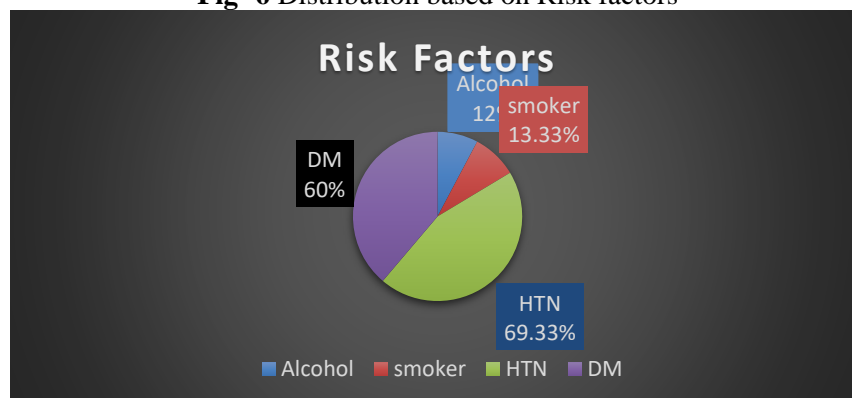
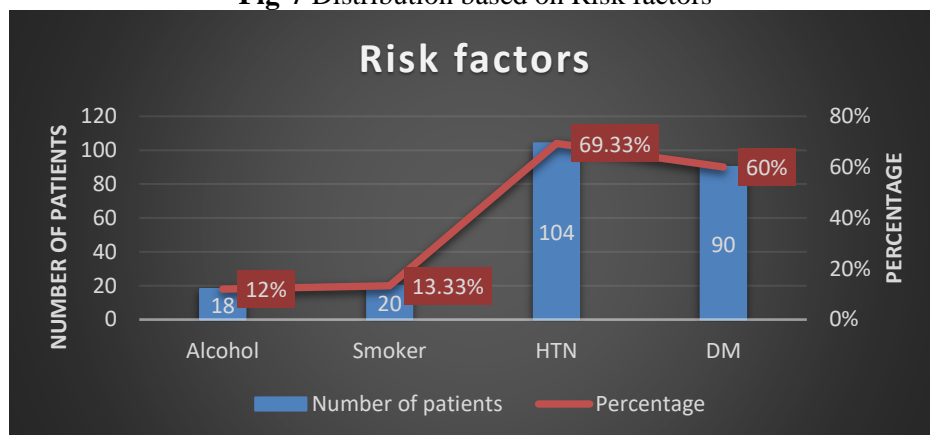


Fig-7 Distribution based on Risk factors



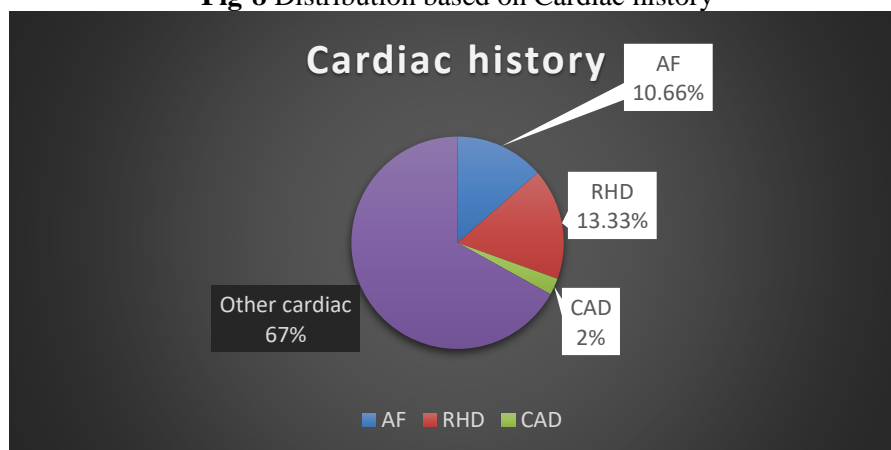
3. Distribution based on Cardiac history

Tab-5 Distribution based on Cardiac history

S.no	Cardiac history	No of patients(n=150)	percentage
1	AF	16	10.66%
2	RHD	20	13.33%
3	CAD	3	2%
4	Other cardiac problems	79	52.66%
5	No cardiac history	32	21.33%

The tables shows distribution based on the cardiac history of the study population out of 150 patients 16(10.66%) are suffering from AF, 20 (13.33%) were suffering from RHD, and 3 (2%) are suffering from CAD, and other cardiac problems were 79 (52.66%) out of 150 patients. 32 (21.33%) having no cardiac history.

Fig-8 Distribution based on Cardiac history



4. Distribution based on mRS SCORE

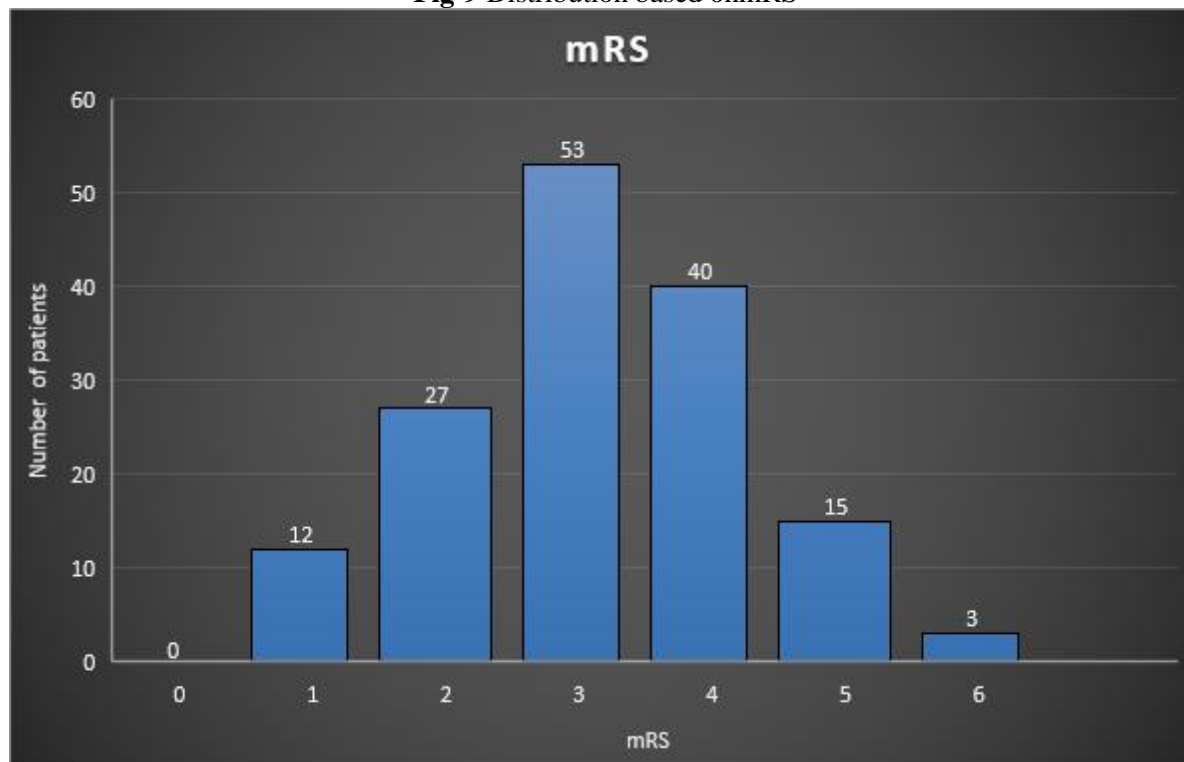
Tab -6 Distribution based on mRS SCORE

S.no	mRSSCORE at discharge	No of patients	percentage
1	0	0	0
2	1	12	8%
3	2	27	18%
4	3	53	35.33%
5	4	40	26.66%
6	5	15	10%
7	6	3	2%

The tables shows distribution based on the mRS score of the study population out of 150 patients 0 (0)-having no symptoms, 12(8%) having a score of 1- no significant disability. Able to carry out all usual activities, despite some symptoms, 27(18%) have a score of 2 - slight disability. able to look after own affairs without assistance but unable to carry out all previous activities, 53(35.33%) having a score of 3 -

moderate disabilities, require some help but is able to walk unassisted, 40(26.66%) having a score of 4 - moderately severe disability. unable to attend to own bodily needs without assistance, or unable to walk unassisted, 15(10%) have a score of 5 - severe disabilities. requires constant nursing care and attention bedridden, incontinent, 3(2%) having a score of 6 – dead.

Fig-9 Distribution based on mRS



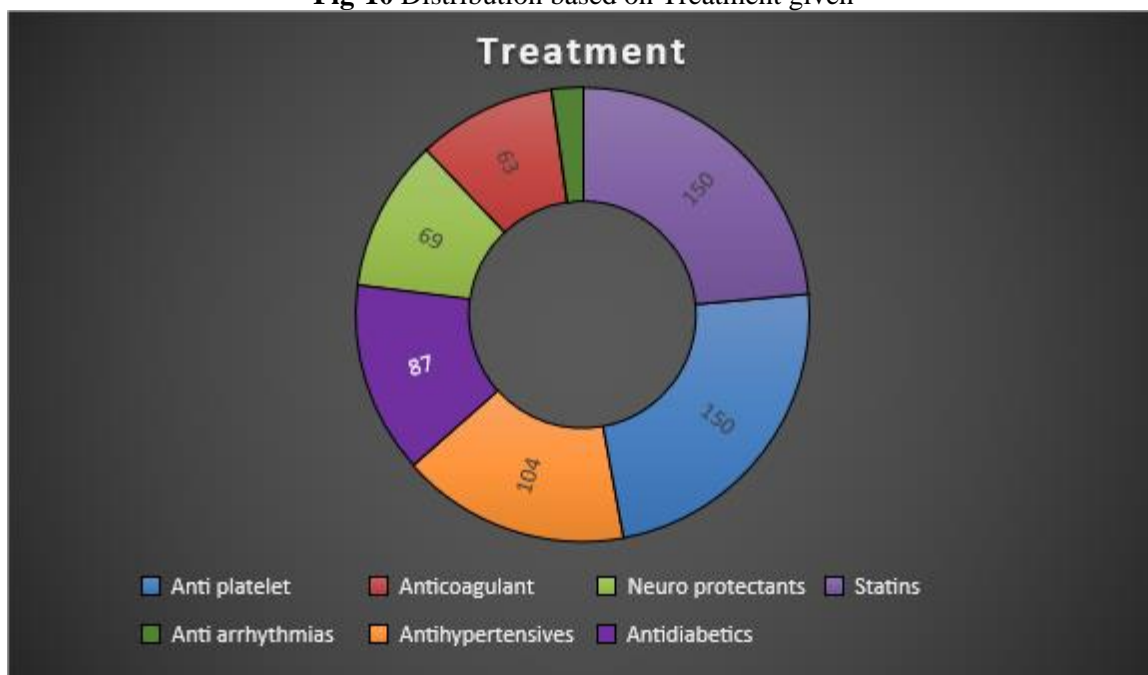
5. Distribution based on Treatment given

Tab-7 Distribution based on Treatment given

S,no	Treatment	No of patients	Percentage
1	Anti platelet	150	100%
2	Anticoagulant	63	42%
3	Neuro protectants	69	46%
4	Statins	150	100%
5	Anti arrhythmias	14	9.3%
6	Antihypertensives	104	69.3%
7	Antidiabetics	87	58%

From the above data, 100% of patients treated with antiplatelets, 100% patients treated with statins, 69% of patients treated with antihypertensives, 46% of patients treated with neuroprotectants, 42% of patients are treated with anticoagulants

Fig-10 Distribution based on Treatment given



8. Distribution based on mRS at Follow up

Tab-7 Distribution based on mRS at Follow up

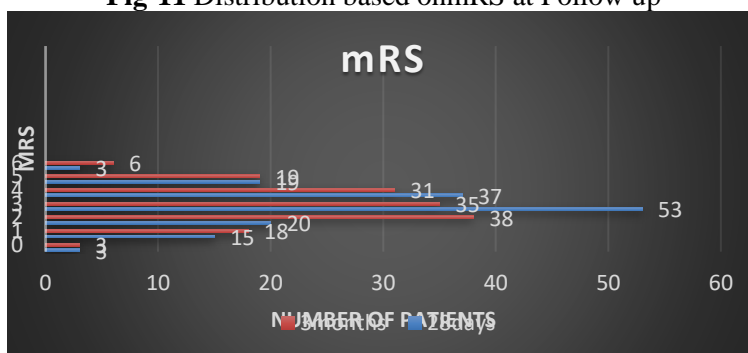
S.no	mRS	28days	3months
1	0	3	3
2	1	15	18
3	2	20	38
4	3	53	35
5	4	37	31
6	5	19	19
7	6	3	6

Coming to our results which we done based on mRS at discharge condition and follow-up at 28 days and 3 months...we saw that 9% of people aged died on the score -6,28% of patients are remain same at mRSscore-5(severe disability. requires constant nursing care and attention) At both follow-ups (28days&3 months)

55.5% of patients were on score-4 (moderately severe disability unable to attend to own body needs without assistance)at 28 days and 46% at 3 months follow up,79.5% of patients were on the

scale -3(moderate of ability. need some help, but able to walk unassisted at 28 days and 52.5% at 3 months follow up 30% of patients were on the score -2(slight disability. able to look after own affairs without assistance but unable to carry out all previous activities)at 28 days and 57% at 3 months follow up,22.5% of patients were on the score-1(no significant disability. able to carry out all activities)at 28 days and 27% at 3 months followup,4.5% patients were on score-0(no symptoms) at both follow-ups

Fig-11 Distribution based on mRS at Follow up



STATISTICAL TEST:

To strengthen the association between therapeutic management & outcome measure in CES chi-square is performed.

Null hypothesis:

There is an association between therapeutic management & outcome measure.

Alternate hypothesis:

There is a significant association between these two variables

Tab :8 Statistical data

mRS	0	1	2	3	4	5	6	TOTAL
At discharge	0	12	27	53	40	15	3	150
Follow-up	3	18	38	35	31	19	6	150
TOTAL	3	30	65	88	71	34	9	300

$$(x)^2 = \sum \frac{(\text{Observed} - \text{Expected value})^2}{\text{Expected value}}$$

Tab :9 CHISQUARE TEST

O	E	O-E	(O - E) ²	(O - E) ² /E
0	1.5	-1.5	2.25	1.5
12	15	-3	9	0.6
27	32.5	-5.5	10.24	0.93
53	44	9	81	1.84
40	35.5	4.5	20.25	0.57
15	17	-2	4	0.23
3	4.5	-1.5	2.25	0.5
3	1.5	1.5	2.25	1.5
18	15	3	9	0.6
38	32.5	5.5	30.25	0.93
35	44	-9	81	1.84
31	35.5	-4.5	20.25	0.57
19	17	2	4	0.23
6	4.5	1.5	2.25	0.50

$$X^2 = 1.5 + 0.6 + 0.93 + 1.84 + 0.57 + 0.23 + 0.5 + 1.5 + 0.6 + 0.93 + 1.84 + 0.57 + 0.23 + 0.50$$

$$X^2 = 12.3$$

Tabular significance level (α)=0.05

(%)² tabulated value =12.5

(%)² calculated value=12.3

X^2 Calculated value (12.3) < X^2 Tabulated value (12.5) with (7-1) degree of freedom at 0.05 level of significance. Hence H_0 (null) was accepted & H_1 (alternative) hypothesis was rejected.

Therefore there is a significant association between therapeutic management and outcome measure in cardioembolic stroke.

DISCUSSION:

The present study aimed to evaluate the therapeutic management and improvement in cardioembolic stroke patients at discharge and follow-up here we included subjects of age below

75 years of both genders and also we included some other comorbidity conditions which may have high chances of CES. those are underlined cardiac problems like RHD, CAD, IHD, MVR conditions, HTN, and DM. here results were drawn only based on age, gender, and comorbid conditions like HTN, DM, RHD, IHD, CAD, MVA, and past medical and medication history of the above conditions. because they play a major role to have CES. And pts with such comorbidities are involved in having a highly effective treatment and following a specific lifestyle, In order to avoid further risk factors. And here we have taken pts who have CES we would observe their therapeutic development by following their condition at 28 days and 3 months

and how the treatment improves their disease condition. and which age and gender people are highly improved which co-morbid condition patients were improved from their disease.

We finally concluded that overall 150 samples by comparing the age we noticed that males (57%) have a high chance to get CES than females (43%) in that 25% of patients were treated with thrombolysis and people who have HTN had a high chance 69% to get CES. then DM (60%). Coming to the cardiac history from 150 sample size. people who have RHD in past history have 13.3% CES. atrial fibrillation (10%) and CAD (2%).

From the above data

100% of patients treated with ANTIPLATELETS

100% patients treated with statins

69% of patients treated with antihypertensives

46% of patients treated with neuroprotectants

42% of patients are treated with anticoagulants

Coming to our results which we have done based on MRS at discharge condition and follow-up at 28 days and 3 months...we see that 9% of people died on the scale -6, 28% patients remain the same at MRS -5 (severe disability. requires constant nursing care and attention)

At both follow-ups (28 days & 3 months)

55.5% of patients were on a scale-4 (moderately severe disability unable to attend to own body needs without assistance) at 28 days and 46% at 3 months follow up, 79.5% of patients were on a scale of 3 (moderate of ability. need some help, but able to walk unassisted) at 28 days and 52.5% at 3 months follow up, 30% of patients were on scale-2 (slight disability. able to look after own affairs without assistance but unable to carry out all previous activities) at 28 days and 57% at 3 months follow up, 22.5% of patients were on scale-1 (no significant disability. able to carry out all activities) at 28 days and 27% at 3 months follow up, 4.5% patients were on scale-0 (no symptoms) at both follow-ups.

CONCLUSION:

The rarely diagnosed disease among cardiac-related problems inpatient department of cardiology and neurology medicine department was found to be a cardioembolic stroke. The most commonly prescribed treatment for CES were TNK (thrombolytic treatment), antiplatelets, anticoagulants, and statins. From This study, we concluded that males (57%) have a high chance to get CES than females (43%). From the study, we conclude that the first line treatment given in CES is thrombolytic therapy, and antiplatelets and

statins therapy shows a high impact on CES patients. People who have comorbid conditions like DM (60%) & HTN (69.33%) have a high chance to get CES from our study, and then neuroprotectants (46%), and anticoagulants (42%) can be given as second-line treatment.

The present study aimed to evaluate the CES risk in an individual patient with or without cardiac history they are affected. Based on our observation males are more affected when compared with females. According to the results, the age group criteria 41-75 are more affected, in our observation thrombolysis was taken by a very low number of patients when compared with more number of patients who have not taken it. Most commonly used drugs like antiplatelets, anticoagulants, statins & antihypertensives, and anti-diabetic drugs are taken based on the comorbidities like HTN & DM. Outcomes are based on the MRS scale, in the overall study of the population out of 150 patients 6 patients died. In the overall study, based on the MRS score 3 is more frequently observed in the follow-up. As clinical pharmacists, we play a major role in giving information about the disease and taking feedback at the time of follow-up.

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