

STROKE



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Dear Doctor,

Greetings from Micro Labs. We are happy to bring you “**Stroke Newsletter**” which contains latest and interesting news in the field of Neuropsychiatry.

This issue contains:

1. A study on early or late initiation of dabigatran versus vitamin k antagonists in acute ischemic stroke or transient ischemic stroke.
2. A study on use of statin and stroke rate in older adults with Atrial fibrillation.
3. A study on large vessel occlusion requiring endovascular therapy
4. A case study on Cerebral Sinus Vein Thrombosis following Sneezing

Should you require any specific article or medical information, please feel free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback

Best Regards,

Medical Team, Micro Labs Ltd



A study on early or late initiation of dabigatran versus vitamin k antagonists in acute ischemic stroke or transient ischemic stroke

Introduction –

Oral anticoagulation significantly lowers the risk of ischemic stroke and systemic embolism in Atrial Fibrillation (AF) patients. In individuals with AF, direct oral anticoagulants (DOAC) have been shown to be an efficient

substitute for vitamin K antagonists (VKA)¹. Early anticoagulant initiation may raise the likelihood of infarct hemorrhagic transformation (HT) and subsequent intracranial hemorrhage (ICH). However, delaying the start of anticoagulation may increase the risk of subsequent ischemic events². The study aimed to compare 3 months' rates of hemorrhagic events between early (≤ 7 days) or late (> 7 days) initiation of dabigatran compared with VKA started at any time in AF patients and a recent Acute ischemic stroke(AIS). This study investigated additional endpoints, such as ischemic stroke, TIA (Transient ischemic attack), systemic embolism, myocardial infarction, and HT, as well as the survival rate depending on treatment.

Early administration of dabigatran seems to be safer than Vitamin K Antagonists taken at any time point.

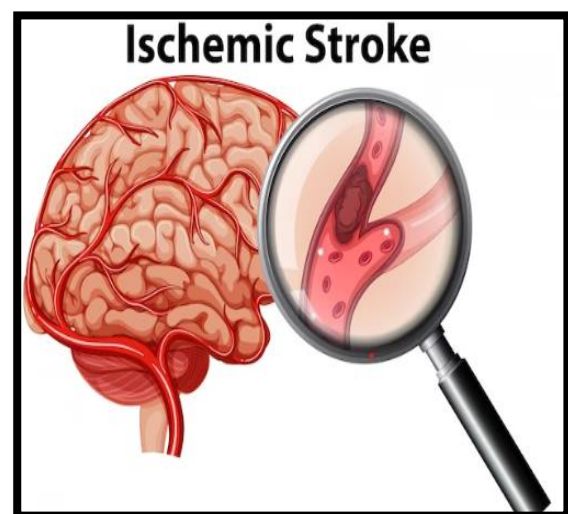


Fig.1 – Ischemic stroke

Methods –

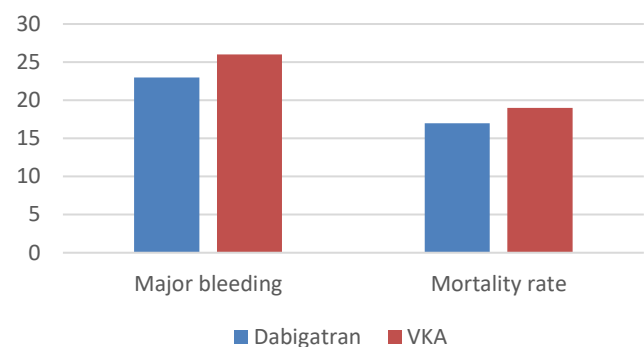
Multi-centre prospective, observational, non-interventional post-authorization safety study was carried out. Study recruited patients who experienced a recent (≤ 7 days) AIS or TIA with AF. A total of 3312 patients were treated with dabigatran or VKA therapy of which 459 dabigatran using patients and 337 VKA using patients were analysed. Primary endpoints were major bleeding events within 3 months following the index event. Secondary endpoints were



recurrent strokes, recurrent ischemic stroke, TIA, systemic/ pulmonary embolism, myocardial infraction, death.

Results – While comparing the early and late initiation of dabigatran with VKA results showed that early initiation of dabigatran was associated with lower rate of HT and late initiation resulted in higher rate of ischemic strokes compared to VKA use. Both early and late initiation of dabigatran showed lower rate of Myocardial infraction. After the late initiation of dabigatran death rates and composite endpoints were reduced. When comparing the current use of dabigatran with VKA 43% reduction was seen in major hemorrhage and rate of HT was reduced by dabigatran use(Fig.1). Dabigatran showed a preventive effect on myocardial infarctions and reduced the mortality rate of half and composite end point occurred less frequently when compared with VKA.

Fig.2- Current use of dabigatran compared with VKA



Discussion –

In this study When comparing early or late initiation of dabigatran with VKA use, the rates of major hemorrhagic events were substantially lower in dabigatran-treated patients. Considering the current treatment outcomes compared with VKA, the current use of dabigatran reduced the rate of major hemorrhages by 43%. Dabigatran use has shown preventive effect on incident myocardial infarctions compared with VKA. A Prospective study by Huisman et al., showed that dabigatran was associated with 39% reduced risk of major bleeding and 22% reduced risk of mortality when compared with VKA³.

Conclusion –

The study concludes that rates of recurrent vascular events were generally low after acute AIS or TIA in patients with AF who were treated with dabigatran or VKA. But administration of dabigatran at the earliest reduces the risk of stroke when compared to VKA.

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A study on use of statin and stroke rate in older adults with Atrial fibrillation

Introduction –

Cardio-embolic stroke can be deadly or severely incapacitating, and Atrial fibrillation (AF) is a significant risk factor for the recurrence of stroke¹. Anticoagulation does not completely

Statins are associated with the lower risk of stroke rate in patients with Atrial fibrillation

reduce the risk of stroke, and greater LDL-C levels are linked to higher stroke rates, therefore many people with AF still have an increased risk of stroke². As a result, initiatives have been taken to enhance the prognosis for acute ischemic stroke (AIS) and AF patients. The study aimed to investigate the association between statin use and stroke rate in AF.

Methods –

This is a population based retrospective cohort study conducted on patients aged ≥ 66 years diagnosed with AF. A total of 261659 qualifying patients were included of which statins were used in 142834 (54.6%) patients, and 145673 (55.7%) had lipid measurements. LDL-C measurements were collected from Ontario Laboratories Information System Database. Statistical analysis was carried out which included hazard regression model to determine the association between statin use with stroke rate. Second model was developed to adjust the lipid levels. Primary outcome was hospitalization with diagnosis of stroke and the secondary outcome was hemorrhagic stroke.



Results -

Results showed that among patients with lipid data, individuals treated with statins had lower LDL-C and high-density lipoprotein values but higher triglyceride values. In comparison to patients with greater LDL-C levels, those with lower LDL-C levels were more likely to have pre-existing hypertension, diabetes, ischemic heart disease, stroke, or peripheral vascular disease and were usually treated with statins, anti-hypertensives, or anticoagulants. Use of statins was associated with decreased stroke rates, with adjusted hazard ratios of 0.83 in case of full cohort and 0.87 when adjusting for lipid data. As the low-density lipoprotein values increased $>1.5\text{mmol/L}$, increase in stroke rates was seen in near-linear manner(Fig.1).

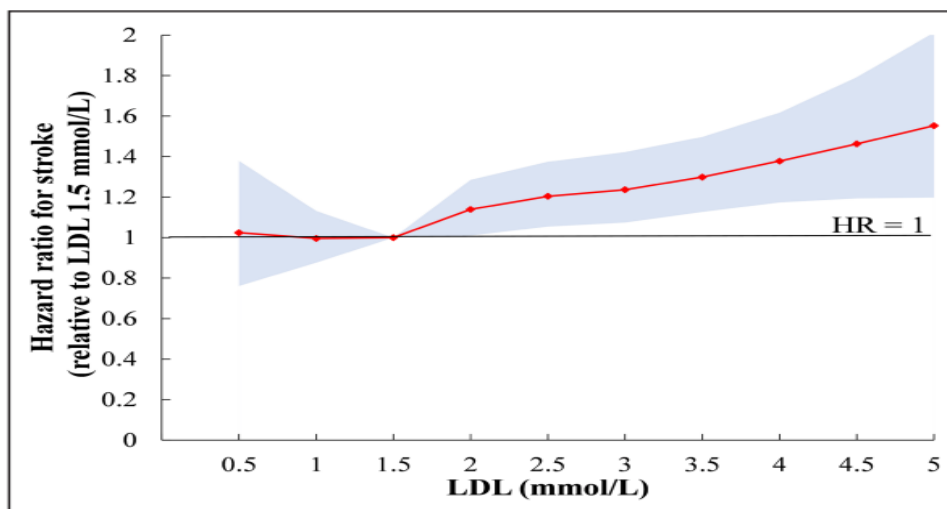


Fig.1 - The association of LDL levels with the rate of stroke

Discussion –

After adjusting for stroke risk variables and antithrombotic medication, statin exposure was linked to considerably decreased incidence of stroke. We found that greater stroke rates were progressively related to LDL-C levels $>1.5\text{ mmol/L}$. Rarely occurring hemorrhagic strokes were not associated with statin use or LDL-C levels. Wańkiewicz et al., conducted a retrospective multicentre analysis which showed that patients with AF who were taking statins had significantly lower chances of stroke and in addition mortality rate also decreased in patients taking statins³. Tseng et al., revealed statin use tends to be associated with lower risk of new-onset AF after Acute Myocardial infarction(AMI) and AMI treated patients with statins had lower mortality regardless of AF pattern⁴.



Conclusion –

Statins use has significantly lowered stroke rates after adjustment of lipid levels, risk factors and anticoagulation use. Additionally, using LDL-C levels could perhaps improve clinical risk classification for individuals with AF.

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A study on large vessel occlusion requiring endovascular therapy

Introduction –

According to the most recent clinical guidelines, recanalization therapy for acute ischemic stroke, including both intravenous and endovascular techniques, is currently provided within restricted time periods¹. Based on numerous clinical trials that demonstrate better outcomes for patients who received endovascular treatment (EVT) compared with intravenous thrombolysis (IVT) alone, the American Heart Association (AHA) recommends endovascular treatment (EVT) for large-vessel occlusion stroke (LVOS) in a class I setting². This study aimed to investigate the relationship between intravenous thrombolysis,

Large vessel occlusion can be treated with Intravenous thrombolysis for better outcomes.



endovascular treatment, and need for transfer among the patients with large vessel occlusion stroke.

Methods –

This study included the analysis of patients with the large vessel occlusion stroke. A total of 1171 patients were included in the study. Data was obtained from electronic medical record stroke database and pre-hospital patients case reports. From the obtained data patient's demographics and characteristics were compared between 2 groups. The outcome of interest was the modified Rankin Scale (mRS) score at 90 days.

Results –

Results showed that good outcome was obtained in 455 patients (38.9%) at 90 days(Fig.1). Good clinical outcomes were associated with male sex and a lower initial National Institutes of Health Stroke Scale score. Receipt of IVT as well as time to IVT were associated with better outcomes in LVOS (Large vessel occlusion stroke). In uni-variable analysis, IVT was associated with an absolute improvement in outcomes by $\approx 19\%$. On a multiple variable study, the only modifiable factor associated to successful outcomes was receiving IVT. In patients who received IVT, the analysis showed that patients who received IVT within 2 hours of stroke onset had better outcomes than those who had times to EVT of 4 to 8 hours.

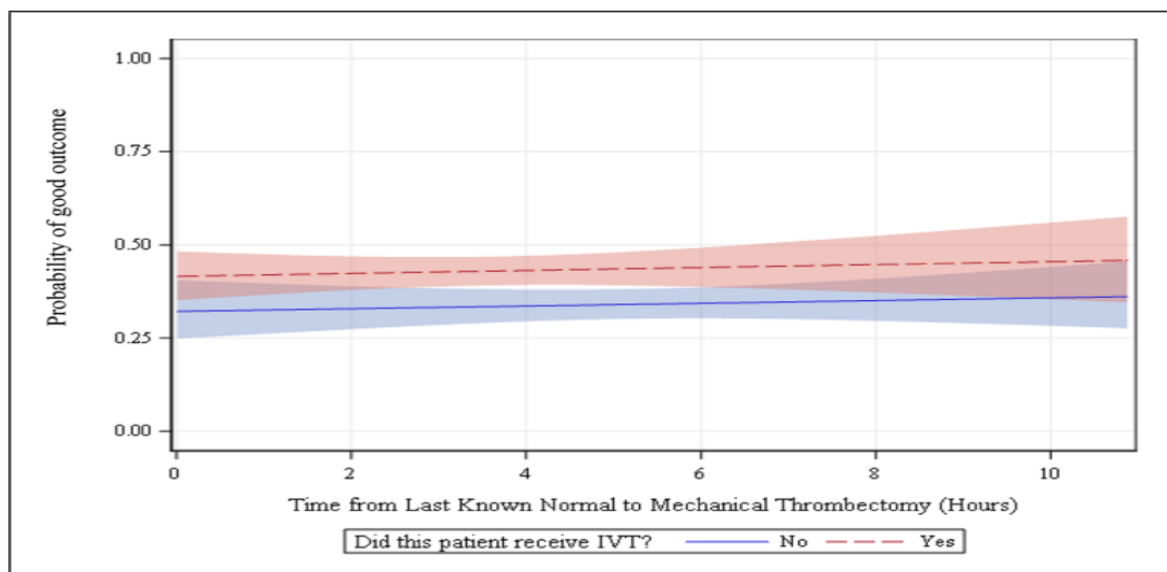


Fig.1- A model of the probability of a good functional outcome at 90 days by time from onset of stroke to endovascular therapy



Discussion –

In this study receipt of IVT was the main driver for good outcomes at 90days. IVT along with EVT was associated with better outcomes than EVT. In this study data, time to EVT was not associated with better outcomes unless the patient received IVT². Manno et al., study on comparing outcomes after EVT and IVT in patients with stroke showed that EVT and IVT appears to be similarly effective in achieving favourable outcomes at 3months for patients with large vessel occlusion and mild neurologic symptoms³.

Conclusion –

This study concluded that patients with large vessel occlusion stroke, receipt of IVT was independently associated with improved outcomes at 90day. Therefore, prehospital stroke transport algorithms must account for timely administration of IVT as well as rapid transport to an endovascular stroke center.

References-

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A case study on Cerebral Sinus Vein Thrombosis following Sneezing

Introduction –

Virchow trinity, which includes venous stasis, blood vessel wall damage, and hypercoagulability,

Computerized tomography must be considered sometimes in patients with headache with no history of trauma.



together known as cerebral sinus venous thrombosis (CSVT). Occlusion of the cerebral veins and sinuses can result from a disruption in the Virchow triad¹. Cerebral vein thrombosis is the important cause of cerebrovascular disease in young adults. CSVT can also be associated with trauma². Here we present a rare case on cerebral sinus vein thrombosis following sneezing.

Case presentation –

A 19 years old patients presented with the complaints of severe right temporal headache one day following sneezing. Headache began soon after sneezing followed by nausea. Some improvement was seen with the treatment of analgesics. Second sneeze resulted in worsening of headache on the admission day. Patient denied preceding trauma, family history and other risk factors for thrombosis. On neurological examination patient was conscious and oriented. In the right transverse dural sinus, non-contrast computer tomography revealed an abnormal hyper-dense signal consistent with an acute sinus thrombosis (Fig. 1).



Fig.1-Non-contrast Computerized tomography of head.

A significant filling deficiency was found in the right jugular vein, sigmoid sinus, transverse sinus, and superior sagittal on CT angiography. In the superior sagittal sinus, an empty delta sign was also seen (Fig. 2a–c).

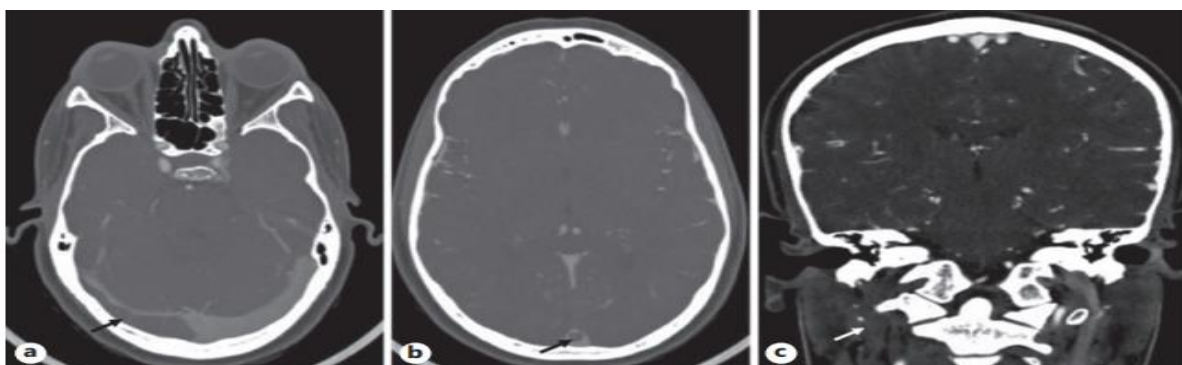


Fig. 2. (a) Filling defect in the right jugular vein, sigmoid sinus, and transverse sinus found in, computed tomography angiography (CTA). (b) The superior sagittal sinus shows a classic empty delta sign. (c) Coronal image shows a filling defect in the right jugular vein with no evidence of venous dissection.



Laboratory parameters were normal. Protein S levels were low may be due to anticoagulation therapy started earlier. D-dimer levels were elevated. Patient was treated with low molecular weight heparin, and was discharged 4 days later with a complete cure of headaches and no sign of bulging discs on the follow-up exam. She was well and had no new neurological complaints or headaches at the follow-up appointment. Patient continued the therapy with warfarin at therapeutic INR levels. Magnetic resonance venography showed complete recanalization (Fig.3).

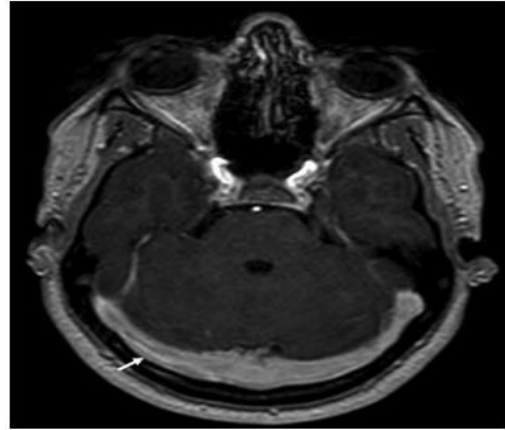


Fig. 3. Follow-up brain image demonstrates complete recanalization

Discussion –

This study presents a unique case of female patient presented with the extensive dural sinus thrombosis following sneezing. Patients presented with the complaints of headache with no other risk factors or incidence of trauma. Rottger et al., describes the involved mechanism may be a combination of acceleration trauma, where structures of brain get impacted against fixed dural structures, and eventually a sudden rise in Intracranial pressure causes damage to endothelial layer of sinuses and cerebral veins². Setzen et al., study result revealed that transmission of Valsalva pressure during a sneeze will result in intracranial, intrathoracic, ocular, laryngeal, otologic, and vascular complications. A similar case in which a female patient had the complaints of headache that has led to the cerebral venous thrombosis following sneezing was reported³. Hence, it is appropriate to consider computed tomography and CVT for patients who presents with complaints of headache after acceleration trauma.

Conclusion –

This case concludes an incidence of cerebral vein thrombosis following sneezing. Additionally, it's important to consider computed tomography and CVT into account for individuals who experience a headache following an acceleration trauma.

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STROKE



Vol 2 | Issue 10 | 2023

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