



A Case Report

“Age is just a number”

Case Report: Stroke in young – secondary to hyper-homocystenemia

Dr. Syeda Safina Hashim, Dr. Syed Abdullah Hashmi, Dr.Sara Parveen

1.
3rd year MD General Medicine Post-graduate, Shadan Institute of Medical Sciences

2.
3rd year MD General Medicine Post-graduate, Shadan Institute of Medical Sciences

3.
3rd year MD Anaesthesia Post-graduate, Shadan Institute of Medical Sciences

Abstract:

Stroke is often thought to be a disease of the elderly, but in the recent years there have been increasing incidence of cases reported with stroke in much younger population. Its extremely unfortunate that there is no surprise anymore to have a stroke diagnosed in a very young patient, it would not be wrong to say that stroke is no more of a disease of the old age. When stroke in older age group, mostly retired population can bring with it major emotional and financial adjustments in a family, one cannot even imagine the dire consequences of such a tragedy when it affects a young and most often than not the sole healthy breadwinner of the family. Here we present a case of a young man with diabetes, who presented with the weakness of his dominant (right) hand. On evaluation he was found to have an ischemic infarct in the dominant hemisphere most probably secondary to elevated levels of hyper-Homocystenemia. With more young people been diagnosed with hypertension or diabetes there is an urgent need to also screen these individuals for presence of additional other common conditions that can contribute towards more serious/ life threatening conditions (like stroke and MI) with major irreversible deficits.

Keywords: Stroke in young,hyper-homocystenemia,Age is just a number

Copyright : © 2022 The Authors. Published by Publisher. This is an open access article under the CC BY-NC-ND license (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

Supplementary information The online version of this article (<https://doi.org/xx.xxx/xxx.xx>) contains supplementary material, which is available to autho-rized users.

Corresponding Author: Dr. Syeda Safina Hashim, 3rd year MD General Medicine Post-graduate, Shadan Institute of Medical Sciences

Introduction:

Ischemic strokes (IS) in young adults comprises of up to 15% of the total disease burden. It's a challenging clinical scenario as there are apparently young otherwise healthy lives at stake(1). The traditional risk factors like hypertension,prior history of stroke, diabetes, obesity, hyperlipidaemia, sedentary/ unhealthy lifestyle are as common or even more in the younger as in older age-groups(2), (4).

There is a need for a more detailed investigation into the different conditions that are more specific for causing stroke in young(3). All the young diabetics and/or hypertensive should undergo a careful cardiac assessment, as cardio- embolic strokes secondary to atrial fibrillation and other rhythm abnormalities have also been found to be a causative factor(5). A small percentage of young stroke patients have also had a history of migraine, some studies also propose that migraine with aura should also be considered a risk factor for TIA, IS and should be promptly treated.

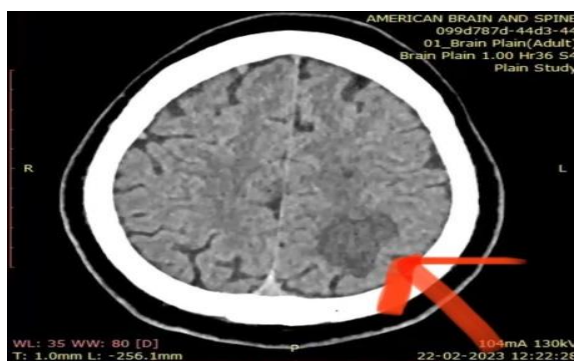
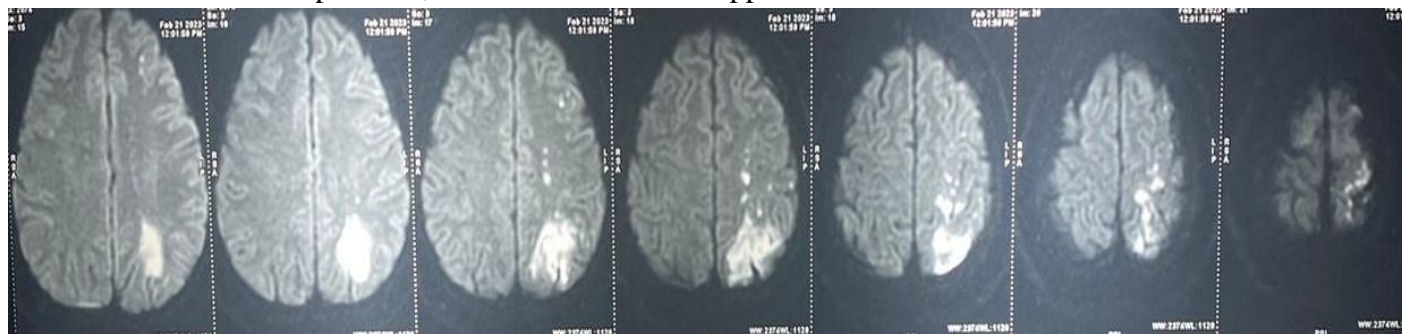
Of the few unique factors contributing only to the young ischemic stroke and much less in the older population is hyper-homocystenemia. Studies have found evidence that hyper-homocystenemia even when

mild could contribute to developing an IS as it effects both the venous and arterial atherosclerotic pathology (6). If Hyper-homocystenemia has such a direct correlation, all the young diabetics and hypertensive should be screened for this condition as is done for other conditions like hyperlipidaemia. As it is a treatable condition, addressing it as early as possible can save a significant number of young patients (7).

Diabetes has been the most consistent factor in most young patient with strokes, early glyceimic control is the proposed strategy in all age groups to prevent all micro and macro vascular complications(8). Uncontrolled diabetes has been directly linked to worse outcomes as hyperglycemia can increase the production of lactate and facilitate the infarction of the hypo-perfused tissue(9). Young diabetes should be educated, aggressively treated and intensively screened for other risk factors/comorbidities – as prevention of the Ischemic Stroke is the only option from otherwise managing the disability.

Case report:

A 29yr old male patient k/c/o - DM on OHAs , presented with c/o sudden right UL weakness since 1 day. On arrival he was found to have uncontrolled sugars, BP- 140/100, GCS- E4V4M6- he was conscious, coherent and obeying commands, his right UL power was 2/5 and there was no other focal neurological deficit. MRI brain with MRA was done that was s/o acute infract in the left parieto-occipital region. Patient was started on oral anti-platelets, insulin and all other supportive treatment.



On further evaluation - Ct cerebral Angio- showed 60-65% stenosis @ origin of left ICA, b/l carotids and vertebral arteries showed no significant stenosis, ECG and 2d-echo were normal. Patient had elevated levels of ESR-18, CRP- 14 and homocysteine levels- 38.65. He had a history of uncontrolled diabetes and HbA1c was 12.10%.

Name	: 29 Years	Sex	: Male	Report	: 23-Feb-2023 17:29
Age	: 29 Years	Referred By	: AMERICAN BRAIN & SPINE NEURO HOSPITAL @ ATTAPUR	Dispatch	: 23-Feb-2023 17:29
Referral Dr	: □	Status	: Final	Location	: 47 - HYDERABAD
Parameter		Result	Biological Reference Interval		
Homocysteine		38.65	5.08 - 15.39 μmol/L		
Sample Type: Serum					
Homocysteine is a sulphur containing amino acid. There is an association between elevated levels of circulating homocysteine and various vascular and cardiovascular disorders. Clinically the measurement of homocysteine is considered important to diagnose homocystinuria, to identify individuals with or at risk of developing cobalamin or folate deficiency & to assess risk factor for Cardiovascular Disease (CVD). Increased homocysteine levels with low vitamin concentrations should be handled as a potential vitamin deficiency case.					
----- End Of Report -----					

Patient was closely monitored in ICU and shifted to step- down unit, physiotherapy was started and was discharged following improvement of symptoms with an advice to follow-up regularly on OP basis.

Discussion:

Although stroke in young comprises of the small percentage but the consequences are far worse than the older age group. Preventive strategies are more relevant than the treatment plan considering the major irreversible disabilities left behind in spite of the best management.

Large number of the young people are being diagnosed with diabetes, that is a major risk factor for not only causing an ischemic stroke but associated with worsening the outcomes. With one major risk factor already present, presence of any other abnormality is a perfect recipe for developing an IS. Besides the presence of diabetes and or hypertension, obesity and hyperlipidaemia with various unhealthy lifestyle habits like unhygienic sleeping patterns smoking and alcohol are invariably found in today's younger population , besides the ambitious working or the academic environment only adds to the stressful situation.

Younger diabetics are more often than not inadequately treated due to various reasons- most common being non- compliance. The importance of controlling the sugars in this subset of patient cannot be stressed enough, as the end-organ damage as a result of the negligence can be devastating. Uncontrolled diabetes can damage all the major organs including- brain, heart, kidneys, eyes and the vascular system. The irreversible endothelial damage is usually the trigger to all the life- threatening emergencies.

Homocysteinemia , even in mild forms has found to be direct causative factor for thrombosis in vascular system. A simple blood test can identify this condition and can be treated. All at risk should be screened for this condition and treated at the earliest to prevent stroke, rather than been investigated for this condition after the development of a focal neurological deficit.

Conclusion:

Stroke in young is a major health problem in terms of the financial and emotional consequences worldwide. Young people diagnosed with hypertension and/or diabetes should also be screened for other risk factors of stroke and MI. besides other common risk factors, many studies have acknowledged hyperhomocysteinemia as one of the major treatable causes of ischemic stroke in young and hence, all individuals should be screened for this condition at the earliest. Addition of the tests for Homocysteine level alongside other routines like dyslipidaemia can save a significant number of young strokes.

References:

1. Singhal AB, Biller J, Elkind MS, Fullerton HJ, Jauch EC, Kittner SJ, Levine DA, Levine SR. Recognition and management of stroke in young adults and adolescents. *Neurology*. 2013 Sep 17;81(12):1089-97. doi: 10.1212/WNL.0b013e3182a4a451. Epub 2013 Aug 14. PMID: 23946297; PMCID: PMC3795593.
2. Smajlović D. Strokes in young adults: epidemiology and prevention. *Vasc Health Risk Manag*. 2015 Feb 24;11:157-64. doi: 10.2147/VHRM.S53203. PMID: 25750539; PMCID: PMC4348138.
3. Boot E, Ekker MS, Putaala J, et al Ischaemic stroke in young adults: a global perspective *Journal of Neurology, Neurosurgery & Psychiatry* 2020;**91**:411-417.
4. Siim Schneider, Alina Kornejeva, Riina Vibo, Janika Kõrv, "Risk Factors and Etiology of Young Ischemic Stroke Patients in Estonia", *Stroke Research and Treatment*, vol. 2017, Article ID 8075697, 7 pages, 2017. <https://doi.org/10.1155/2017/8075697>

5. Moond V, Bansal K, Jain R (November 09, 2020) Risk Factors and Subtyping of Ischemic Stroke in Young Adults in the Indian Population. *Cureus* 12(11): e11388. doi:10.7759/cureus.11388
6. Lehotský J, Tothová B, Kovalská M, Dobrota D, Beňová A, Kalenská D, Kaplán P. Role of Homocysteine in the Ischemic Stroke and Development of Ischemic Tolerance. *Front Neurosci.* 2016 Nov 23;10:538. doi: 10.3389/fnins.2016.00538. PMID: 27932944; PMCID: PMC5120102.
7. Niazi F, Aslam A, Khattak S, Waheed S. Frequency of Homocysteinemia in Young Ischemic Stroke Patients and Its Relationship with the Early Outcome of a Stroke. *Cureus.* 2019 Sep 11;11(9):e5625. doi: 10.7759/cureus.5625. PMID: 31700728; PMCID: PMC6822887.
8. Chen R, Ovbiagele B, Feng W. Diabetes and Stroke: Epidemiology, Pathophysiology, Pharmaceuticals and Outcomes. *Am J Med Sci.* 2016 Apr;351(4):380-6. doi: 10.1016/j.amjms.2016.01.011. PMID: 27079344; PMCID: PMC5298897.
9. McFarlane SI, Sica DA, Sowers JR. Stroke in patients with diabetes and hypertension. *J Clin Hypertens (Greenwich).* 2005 May;7(5):286-92; quiz 293-4. doi: 10.1111/j.1524-6175.2005.04379.x. PMID: 15886531; PMCID: PMC8109587.