Ischemic stroke among patients with metabolic syndrome with or without type 2 diabetes mellitus

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List of Abbreviations

(11β-HSD1)	11β-hydroxysteroid dehydrogenase type 1
(5-HT)	5-hydroxytryptamine
(AACE)	American Association of Clinical Endocrinologists
(ACA)	Anterior cerebral arteries
(ADRB)	β-adrenergic receptors
(AGEs)	Advanced glycosylation end products
(apoB)	Apolipoprotein B
(ARIC)	Atherosclerosis Risk in Communities
(BA)	Basilar artery
(BMI)	Body mass index
(CD36)	Cluster of differentiation 36
(CHAOS)	Coronary artery disease, hypertension, atherosclerosis, obesity, stroke
(cm)	Centimeter
(CRP)	C-reactive protein
(CT)	Computed tomography
(CVD)	Cardiovascular diseases
(DAG)	Diacylglycerol
(DWMH)	Deep white matter hyperintensity
(ECG)	Electrocardiogram
(EF)	Ejection fraction
(ENHP)	Egyptian National Hypertension Project
(eNOS)	Endothelial nitric oxide synthase
(ER)	Endoplasmic reticulum
(ET-1)	Endothelin-1
(FFA)	Free fatty acids
(FPG)	Fasting plasma glucose
(G-6-P)	Glucose 6-phosphate
(GIP)	Glucose-dependent insulinotropic peptide
(GLP-1)	Glucagon-like peptide1
(GLUT4)	Glucose transporter 4

(HbA1c)	Hemoglobin A1C
(HDL)	High density lipoprotein cholesterol
(HK)	Hexokinase
(HPA)	Hypothalamo-hypophyseal-adrenal axis
(HTN)	Hypertension
(IAPP)	Islet associated polypeptide
(ICA)	Internal carotid artery
(ICS)	Intracranial stenosis
(IDF)	International Diabetes Federation
(IFG)	Impaired fasting glucose
(IGT)	Impaired glucose tolerance
(IL6)	Interleukin-6
(IMT)	Intima-media thickening
(IRS)	Insulin receptor substrates
(ISHD)	Ischemic heart disease
(JNK)	Jun kinase
(kg/m^2)	$Kilogram/meter^2$
(LAD)	Left atrial diameter
(LCFA)	Long chain fatty acid
(LDL)	Low-density lipoprotein cholesterol
(LVH)	Left ventricular hypertrophy
(MAPK)	Mitogen-activated protein kinase
(MCA)	Middle cerebral arteries
(mg/dL)	Milligram/deciliter
(MI)	Myocardial infarction
(mm Hg)	Millimeter mercury
(mmol/L)	Millimole/liter
(MRA)	Magnetic resonance angiography
(MRI)	Magnetic resonance imaging
(NASCET)	North American Symptomatic Carotid Endarterectomy Trial
(NCEP ATPIII)	National Cholesterol Education Program Adult Treatment Panel III
(NIHSS)	National Institutes of Health Stroke Scale
(NO)	Nitric oxide

(OGTT)	Oral glucose tolerance test
(PAI-1)	Plasminogen activator inhibitor-1
(PC)	Pyruvate carboxylase
(PCA)	Posterior cerebral arteries
(PDH)	Pyruvate dehydrogenase
(PDPK-1)	3-phosphoinositide-dependent protein kinase-1
(PFK-1)	Phosphofructo-1-kinase
(PI3-K)	Phosphoinositide 3-kinase
(PKB)	Protein Kinase B also known as (Akt)
(PKC)	Protein kinase C
(PPAR γ)	Peroxisome proliferator-activated receptor
(PVH)	Periventricular hyperintensity
(RAGE)	Receptors for advanced glycosylation endproducts
(RAS)	Renin-Angiotensin system
(RBP4)	Retinol-binding protein 4
(ROS)	Reactive oxygen species
(T2DM)	Type 2 Diabetes mellitus
(TAFI)	Thrombin-activatable fibrinolysis inhibitor
(TCD)	Transcranial Doppler sonography
(TGF-β)	Transforming growth factor-β
(TGs)	Triglycerides
(TIAs)	Transient ischemic attacks
(TNF-α)	Tumor necrosis factor-α
(TOAST)	Trial of Org10172 in Acute Stroke Treatment
(TOF)	Three-dimensional Time-Of-Flight
(UDP-GlcNAc)	Uridine diphosphate N-acetylglucosamine
(VCAM-1)	Vascular cell adhesion molecules
(VLDL)	Very low density lipoprotein cholesterol
(WASID)	Warfarin-Aspirin Symptomatic Intracranial Disease
(WHO)	World Health Organization
(μg/min)	Microgram/minute

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Metabolic syndrome is a combination of medical disorders that, when occurring together, increase the risk of developing cardiovascular diseases including strokes. It affects one in five people in the United States and prevalence increases with age. Metabolic syndrome is also known as metabolic syndrome X, cardiometabolic syndrome, syndrome X, insulin resistance syndrome, Reaven's syndrome and (CHAOS) that stands for coronary artery disease, hypertension, atherosclerosis, obesity and stroke **(Renaldiet al, 2009)**.

The pathophysiology of metabolic syndrome is extremely complex and has been only partially explained. Development of visceral fat, increased plasma levels of tumor necrosis factor-α (TNF-α) and interleukin-6 (IL6) and altered levels of a number of other substances (e.g., adiponectin, resistin) play a pivotal role. It is not contested that cardiovascular risk factors tend to cluster together, but what is contested is the assertion that the metabolic syndrome is anything more than the sum of its constituent parts **(Narasimhan and Raynor, 2010)**.

Components of the so called (metabolic syndrome) were frequently found in stroke patients and patients with