

Research & Reviews: Journal of Medical and Health Sciences

Review on Vascular Diseases & Its Treatment

Priyanka Etneni*

Department of Pharmaceutical Analysis, Malla Reddy College of Pharmacy, Hyderabad, India

Review Article

Received date: 15/07/2016
Accepted date: 20/07/2016
Published date: 28/07/2016

*For Correspondence

Priyanka E, Department of Pharmaceutical Analysis, Malla Reddy College of Pharmacy, Hyderabad, India, Tel: 9000901004.

E-mail: priyankaetneni@gmail.com

Keywords: Vascular infection, Endothelial cells, Coronary veins.

ABSTRACT

Vascular illness is an obsessive condition of expansive and medium solid corridors and is activated by endothelial cell dysfunction. treatment of vascular diseases include, smoking and drinking should be controlled, lowering of blood pressure, glucose levels and cholesterol, and regular exercise should be done, vascular disease usually happens at destinations of turbulent blood stream, for example, when the course of blood stream in the corridors changes suddenly. Drugs can be recommended by your specialist to lower cholesterol levels, to diminish or control hypertension, to enhance blood stream, and to control glucose in diabetes.

INTRODUCTION

This entire system of vessels is known as your vascular or circulatory framework. "Vascular" originates from a Latin word for empty holder. Any condition that influences this framework is viewed as vascular illness. The illnesses range from issues with your supply routes, veins, and vessels that convey lymph to clutters that influence how blood streams. This disease can prompt your tissues not getting enough blood; this condition is called ischemia, and in addition different genuine even life-debilitating issues. Vascular illness is an obsessive condition of expansive and medium solid corridors and is activated by endothelial cell dysfunction. Because of variables like pathogens, oxidized LDL particles and other incendiary endothelial cells get to be active^[1-5]. The procedure causes thickening of the vessel divider, shaping a plaque that comprises of multiplying smooth muscle cells, macrophages and lymphocytes. The plaque results in a confined blood stream which will diminish the measure of oxygen and supplements that achieve certain organs, the plaque may crack creating the development of clumps. It can be hard to make a Vascular diagnosis since there are an assortment of side effects that a man can have, additionally family history and a physical examination are imperative^[6-8]. The physical exam might be distinctive relying upon the kind of vascular infection. On account of a fringe vascular disease the physical exam comprises in checking the blood stream in the legs. For Treatment of vascular diseases, smoking and drinking should be controlled; lowering of blood pressure, glucose levels and cholesterol, and regular exercise should be done^[9-15].

There are a few sorts of vascular sickness, (which is a subgroup of cardiovascular ailment) among them are:

- **Erythromelalgia** - an uncommon fringe vascular sickness where disorders incorporate burns, high temperature, erythema and swelling, mostly the hands and feet are affected.
- **Peripheral artery disease** - happens when atheromatous plaques develop in the arteries that supply blood to the arms and legs, plaque causes the courses to limit or get to be blocked^[16].
- **Renal artery stenosis** - is the narrowing of renal veins that convey blood to the kidneys from the aorta.
- **Buerger's infection** - is because of little veins that aggravate and swell vessels then tight or are obstructed by blood clusters.

- **Raynaud's sickness** – an uncommon fringe vascular confusion of choking of the fringe veins, in the fingers and toes when the individual is cold ^[17].
- **Disseminated intravascular coagulation** – widespread of clotting in the smaller blood vessels is activated
- **Cerebrovascular disease** – a gathering of vascular illnesses that influence cerebrum capacity ^[18].

Vascular disease usually happens at destinations of turbulent blood stream, for example, when the course of blood stream in the corridors changes suddenly ^[19-23]. The figure delineates destinations in the blood vessel framework where this adjustment in course of blood stream happens ^[24-27].

Curve Branches supply blood to the mind through the carotid veins, and when infected, as often as possible cause life debilitating strokes.

Coronary veins supply blood to the heart and, when sick, can obstruct the stream of blood and cause a heart assault. This is a cardiovascular sickness and is essentially overseen by heart pros – cardiologists ^[28-31].

Iliac Arteries supply blood to the hip and the legs and, when sick, cause leg torment with strolling (claudication), regularly in both legs ^[32].

Renal Arteries supply blood to the kidneys and, when unhealthy, can bring about hypertension and in the long run, kidney disappointment ^[33].

Femoral Arteries supply blood to the legs. In the event that they get to be unhealthy, it might bring about claudication, generally in the calf muscles ^[34-42]. This absence of course can prompt ceaseless torment in the toes and foot, and may advance to basic appendage ischemia (CLI) ^[43-47].

Vascular infection influences the whole body and incorporates stroke, fringe conduit ailment (PAD), stomach aortic aneurysm (AAA), carotid course sickness (CAD), arteriovenous deformity (AVM), basic appendage ischemia (CLI), pneumonic embolism (blood clumps), profound vein thrombosis (DVT), constant venous inadequacy (CVI), and varicose veins.

Everybody is at danger for vascular infection. With the expansion in heftiness and Type II diabetes in Americans and as the populace ages, it is evaluated that by 2024 vascular sickness will take the lives of more than 2 million Americans every year ^[48].

Some of the vascular diseases which are shortly explained:

Abdominal aortic aneurysm

More of aortic aneurysms happen in the stomach district underneath the stomach. They are brought on by a debilitating of the aortic divider. At the point when the width of a district of the aorta extends more than half its ordinary size or more noteworthy than three centimeters, it is irregular, conceivably dangerous, and is viewed as an Abdominal Aortic Aneurysm (AAA) ^[49].

There are two essential medicines for AAA. The main, open surgical repair of an AAA has been utilized for more than 50 years. It remains an exceptionally effective technique. The unhealthy part of the aorta is supplanted with an engineered unite that is painstakingly coordinated to the extent of the typical aorta and set up by the specialist. The second, endovascular repair, has been created in the most recent decade as a less intrusive repair. It was affirmed by the Federal Food and Drug Administration in 1999. Amid this procedure a "stent" joining is embedded through a vein in the crotch and conveyed to the aneurysm by means of a catheter. Guided by x-beam pictures, the union is situated and secured to prohibit the aneurysm ^[50,51].

Aortic dissection

Aortic dismemberment is an exceptional yet life undermining disaster influencing the aorta. The aorta is the biggest supply route of the body through which blood leaves the heart to convey oxygenated blood to whatever is left of the body. It happens in around 24 individuals for each million every year in the U.S. It is brought on when the internal layer of the aortic divider tears and afterward peels or isolates far from the following layer of the aorta.

Atherosclerosis

Atherosclerosis is a vascular infection that is brought about by a development of plaque in the internal coating (intima) of conduits that limits or squares blood stream to a particular organ or district of the body. The figure indicates typical and infected arteries. You will be unable to counteract atherosclerosis, yet you can back off its movement by receiving a solid lifestyle, the accurate reason for atherosclerosis is obscure, however irritation of the intima is connected with the improvement of sickness. It happens regularly as individuals become more established, and it might start prior in people with a solid family history of vascular disease ^[52].

Carotid artery disease

Carotid vein sickness is characterized by the narrowing or blockage of the carotid artery because of the development of plaque (which is a store of cholesterol, calcium and different cells in the course divider). The carotid supply routes are on every

side of your neck and convey oxygen-rich blood from your heart to your head and brain. Medications: Several pharmaceuticals might be recommended to forestall further movement of the ailment and to decrease the impact of contributing elements, for example, hypertension, elevated cholesterol, and diabetes. Endovascular medications are the slightest obtrusive and include embedding a catheter into the vein in the crotch and managing it through your veins to the carotid corridor. Angioplasty might be done to open blockages by utilizing a little inflatable brought with a catheter into a supply route

Chronic venous insufficiency

Chronic Venous Insufficiency (CVI) is a medicinal condition in which the valves in the veins of the lower body don't appropriately channel blood stream back to the heart in light of blockage or venous valve breakdown, bringing about moderate blood stream, expanded weight and swelling in the legs and feet. Chronic venous deficiency requires utilization of very much fitted, flexible pressure leggings at whatever point the patient is out of bed. Backslides regularly happen when the patient is doing admirably and erroneously trusts this vital routine can be ended. On the off chance that the tights are not worn, this can bring about expanded lower leg swelling, staining, and inevitable breakdown of the skin prompting a ulcer ^[53-60].

Deep vein thrombosis

Deep vein thrombosis is the development of blood coagulation (thrombus) in a profound, inside vein (instead of varicose veins). At the point when a vein is aroused (phlebitis) it regularly frames a thrombus, which limits blood course through the vein. A part of the coagulation can split away and go through the veins to the lungs. Blockage of an extensive vessel in the lungs, called an aspiratory embolism, may bring about genuine confusions and conceivably demise ^[61-64]. Thrombosis in varicose or shallow veins is typically treated with calming drugs, together with hoisting the legs to decrease weight. Profound vein thrombosis is instantly treated with anticoagulants (blood thinners), together with bed rest and rise of the legs above heart level to lessen weight and advance the stream of blood back to the heart.

Lymphedema

(We have small amount of liquid (lymph) in our body tissues. This liquid leaves our blood framework to give water and food to the tissues. The greater part of this liquid is gathered by an arrangement of seepage tubes, like veins, called the lymphatic framework. Lymphedema is swelling which is because of a development of lymph in the appendages if the liquid is not depleting out properly ^[65-69]. The most normal reason for lymphedema is that you were conceived without enough lymphatic. On the off chance that there are not very many lymphatic then the swelling may begin as a young person or significantly prior. This sort of lymphedema is called Milroy's Disease. One leg is frequently more terrible than the other and some of the time one and only leg is influenced ^[70-76].

Fringe Artery Disease (PAD – otherwise called Peripheral Vascular Disease or PVD) results from a dynamic thickening of a vein's coating created by a development of plaque, which limits or pieces blood stream, diminishing flow of the blood to a particular organ or area of the body ^[77-79]. This procedure, atherosclerotic occlusive vascular infection or atherosclerosis, is regularly called "solidifying of the arteries" ^[80-83]. "Prescription Medications: Drugs can be recommended by your specialist to lower cholesterol levels, to diminish or control hypertension, to enhance blood stream, and to control glucose in diabetes ^[83-86].

Blood vessel Surgery: The customary treatment for manifestations created by fringe vascular malady is to expel or sidestep the blood vessel ailment. These strategies are protected, successful, and solid. Sidestep surgery utilized as a part of blood vessel blockage in the stomach area or legs is the favored strategy for treatment since the illness is broader ^[87-92]. A manufactured union is set to bear typical blood stream the sick section. Angioplasty and Stenting is a more up to date treatment technique that is less intrusive than surgery ^[93-95]. It opens blockages by utilizing little inflatables brought with a catheter into a vein. The inflatable is then swelled (angioplasty). As it expands, it extends and opens the corridor for enhanced blood stream. A metallic gadget called a "stent" can then be embedded to keep up the extended corridor, in this way enhancing blood stream to the leg ^[96,97].

Cluster Removal: When clumps totally impede blood stream, a catheter can be utilized to convey medications to break down the coagulation, or evacuate the coagulation straightforwardly to reestablish blood stream and save the appendage ^[98-100].

Vascular diseases which may include many related diseases which further related to major diseases hence proper care should be taken for the prevention, after the symptoms were diagnosed proper treatment and medication should be taken.

REFERENCES

1. Li M, et al. To live long, eat less salt: salt intake reduction promotion and hypertension control in china. Health Care: Current Reviews. 2016;4:169.
2. Giunta J, et al. Sleep disorders and cardio-renal disease: implications for minority populations. Epidemiology (Sunnyvale). 2016;6:e120.
3. Raina SK. From nhm to npcdcs: Epidemiological transition and need for a national program for diabetes in India. J Metabolic Synd. 2016;5:204.
4. Sanai T, et al. Benefits and adverse effects of statins, atorvastatin calcium hydrate, pitavastatin calcium and pravastatin sodium, for dyslipidemia in patients on hemodialysis. J Metabolic Synd. 2016;5:202.

5. Abu-Dief EE, et al. Histological modifications aging aorta in male albino rat. *J Cytol Histol.* 2016;7:408.
6. Altura BM, et al. Genotoxic effects of magnesium deficiency in the cardiovascular system and their relationships to cardiovascular diseases and atherogenesis. *J Cardiovasc Dis Diagn.* 2016;S1:008.
7. Sarfaraz S, et al. Comparative evaluation of hypolipidemic effects of ethanolic extract of fruit of *Piper chaba* and *Piper nigrum* on albino rabbits. *Forensic Biomechanics.* 2016;7:128.
8. Vernekar M and Amarapurkar D. Diet-Gene interplay: an insight into the association of diet and fads gene polymorphisms. *J Nutr Food Sci.* 2016;6:503.
9. Memon AG, et al. Correlation of glycated hemoglobin (hba1c) with different cardiovascular risk factors in non-diabetic patients. *J Cardiovasc Dis Diagn.* 2016;4:243.
10. Zhang W, et al. The role of NADPH oxidases in cardiovascular disease. *J Vasc Med Surg.* 2016;4:265.
11. Afroz R, et al. Honey-derived flavonoids: natural products for the prevention of atherosclerosis and cardiovascular diseases. *Clin Exp Pharmacol.* 2016;6:208.
12. Sofi F, et al. Consumption of buckwheat products and cardiovascular risk profile: A randomized, single-blinded crossover trial. *J Nutr Food Sci.* 2016;6:501.
13. Attar RZ and Safdar OY. Left ventricular hypertrophy in obese children. *J Obes Weight Loss Ther.* 2016;6:309.
14. Caprio MG, et al. Vascular disease in patients with multiple sclerosis: A review. *J Vasc Med Surg.* 2016;4:259.
15. Singh KD and Karnik SS. Angiotensin receptors: structure, function, signaling and clinical applications. *J Cell Signal.* 2016;1:111.
16. Edith NF, et al. *Pleurotus florida* aqueous extracts and powder influence lipid profile and suppress weight gain in rats fed high cholesterol diet. *J Nutr Food Sci.* 2016;6:473.
17. Altura BM, et al. Potential roles of magnesium deficiency in inflammation and atherogenesis: Importance and cross-talk of platelet-activating factor and ceramide. *J Clin Exp Cardiol.* 2016;7:427.
18. Maksimovich. Transcatheter cerebral revascularization in the treatment of atherosclerotic lesions of the brain. *Brain Disord Ther.* 2016;5:209.
19. Abbas R, et al. Longitudinal study of blood pressure during 8 years; patterns and correlates: Yazd healthy heart project. *J Hypertens.* 2016;5:215.
20. Telman G. Ethnicity, cerebrovascular diseases and atherosclerosis- related syndromes and phenomena in northern Israel. *Brain Disord Ther.* 2016;5:208.
21. Marinescu GA and AL Nablsi E. Creating a proactive behavior towards exercising after a transient ischemic attack. *Int J Neurorehabilitation.* 2016;3:191.
22. Borchevkin D, et al. method of photoplethysmography diagnostics of domesticated animal's cardiovascular diseases. *J Veterinar Sci Technol.* 2016;7:287.
23. Tanaka M. Relationship between urinary pentosidine concentration and vascular complications in type 2 diabetic patients. *J Diabetes Metab.* 2016;7:640.
24. Möller K, et al. Effects of a high carbohydrate and high protein formula diet on body composition and metabolic risk parameters in obese subjects. *J Obes Weight Loss Ther.* 2016;5:291.
25. Saeed A, et al. The heart and herbs: back to the nature. *J Health Med Informat.* 2015;6:212.
26. Murakami K. New components of the renin-angiotensin- aldosterone system and oxidative stress. *J Hypertens (Los Angel).* 2015;4:211.
27. Butrón PL, et al. Association between cardiovascular disease, cerebrovascular disease and overweight and obesity among adults in Puerto Rico. *J Trop Dis.* 2015;S1-005.
28. Sandhu H. Cardiovascular diseases associated with pregnancy: Early assessment using non-invasive microRNA profiling. *Clinics Mother Child Health.* 2015;12:212.
29. Omanwar S, et al. Molecular basis for mercury- induced alteration in endothelial function: No and its modulators. *Cardiovasc Pharm Open Access.* 2015;4:167.
30. Malick R and Belmadani S. Endoplasmic reticulum stress and heart complication in diabetes. *J Diabetes Metab.* 2015;6:630.
31. Graziano R, et al. Carotenoids and cardiovascular prevention: An update. *J Nutr Food Sci.* 2015;5:441.
32. Aksoy H and Sebin SO. *H. pylori* and cardiovascular diseases. *Gen Med (Los Angel).* 2015;S1:007.
33. Slama FB, et al. Correlations of oxidized low density lipoprotein with insulin, leptin and risk of cardiovascular disease in a group of diabetic obese Tunisian women. *J Obes Weight Loss Ther.* 2015;5:279.

34. Li M, et al. (2015) Astragaloside IV and statin increased the islet function and proliferation for beta cells in STZ-induced diabetic mice. *J Diabetes Metab.* 2015;6:611.
35. Muralidaran Y and Viswanathan P. Diabetic cardiomyopathy: a new perspective of mechanistic approach. *J Diabetes Metab.* 2015;6:605.
36. Ajdukovic J. The role of nlrp3 inflammasome in cardiovascular diseases. *J Clin Exp Cardiol.* 2015;6:399.
37. Berezin. Are endothelial cell-derived microparticles predictive biomarkers in cardiovascular diseases? *Atheroscler Open Access.* 2016;1:e101.
38. Karuna S, et al. Effect of high fiber and omega-3 rich diet on hypercholesterolemia patients. *J Nutr Food Sci.* 2015;5:412.
39. Ricci G, et al. Main findings on therapeutic management of lower extremity artery disease. *Cardiol Pharmacol.* 2015;S1:001.
40. Lipovka Y and Konhilas JP. AMP-activated protein kinase signalling in cancer and cardiac hypertrophy. *Cardiol Pharmacol.* 2015;4:154.
41. Alzu'bi AA. Simvastatin-induced pleuro-pericardial effusion and megaloblastic anemia. *J Gen Practice.* 2015;3:198.
42. Sur A, et al. Evaluation of role of serum lipoprotein and lipid profile in essential hypertension patients in a tertiary care hospital. *J Hypertens.* 2015;4:204.
43. García-Heredia A, et al. Paraoxonase-1 deficiency does not influence clopidogrel antiplatelet function in mice. *Cardiol Pharmacol.* 2015;4:148.
44. Zhao R, et al. The feasibility of combined coronary and supra-aortic arteries CT angiography with a single high-pitch acquisition protocol using dual-source CT. *Angiol.* 2015;3:147.
45. Dorobantu FL, et al. Giant lipoma originating from the right ventricular infundibulum - a case report. *J Clin Exp Cardiol.* 2015;6:379.
46. Nasrat SAM, et al. Role of blood-let out cupping therapy in angina and angina risk management. *J Clin Case Rep.* 2015;5:523.
47. Zafar R. A New insight into pathogenesis of cardiovascular diseases: Stress induced lipid mediated, vascular diseases. *J Cardiovasc Dis Diagn.* 2015;3:206.
48. Nasrat AM, et al. Role of blood-let out cupping therapy in angina and angina risk management. *Gen Med (Los Angel).* 2015;3:191.
49. Faruk EM, et al. Histological, immunohistochemical and biochemical study on the possible cardioprotective and antihypertensive role of the flavonoid in unilateral renal artery ligation of adult albino rats. *J Cytol Histol.* 2015;6:326.
50. Dincer UD. Human endothelial progenitor cell application in vascular diseases seen in metabolic syndrome. *J Metabolic Synd.* 2015;4:e115.
51. Abd-Elbaky AE, et al. Associations of serum omentin and apelin concentrations with obesity, diabetes mellitus type 2 and cardiovascular diseases in Egyptian population. *Endocrinol Metab Synd.* 2015;4:171.
52. Zafar R. An insight into pathogenesis of cardiovascular diseases. *J Cardiovasc Dis Diagn.* 2015;3:197.
53. Ferri N, et al. Pharmacological inhibition of phospholipase a2: Results from phase 3 clinical trials with darapladib and varespladib in patients with cardiovascular disease. *Cardiol Pharmacol.* 2015;4:137.
54. Menut M, et al. Characterization of the mechanical properties of the human aortic arch using an expansion method. *J Vasc Med Surg.* 2015;3:188.
55. Akinseye OA and Akinseye LI. Home blood pressure monitoring and hypertension control. *Primary Health Care.* 2015;5:182.
56. Kelli HM, et al. Cardio metabolic syndrome: a global epidemic. *J Diabetes Metab.* 2015;6:513.
57. Sonoda JI, et al. Green tea catechins-pharmacokinetic properties and health beneficial effects. *Pharm Anal Acta.* 2015;6:333.
58. Mahajan K. Microparticles in atherosclerosis: Biomarkers of disease. *J Clin Exp Cardiol.* 2015;6:356.
59. Wang JZ, et al. Clinical benefits of the classification of cardiovascular patients based on the polymorphisms of natriuretic peptide receptor genes. *J Mol Biomark Diagn.* 2014;5:208.
60. Augusto TTR, et al. Cardiovascular disease as cause for disability pensions. *Occup Med Health Aff.* 2014;2:186.
61. Chwalba A and Otto-Buczkowska E. Metabolic syndrome is the problem in young diabetics? *Fam Med Med Sci Res.* 2014;3:148.
62. Sidhu KS and Kateb B. World brain mapping and therapeutic initiative: A proposed g20 priority due to major impact of the cost of neurological disorders on the world economy. *J Neurol Disord.* 2014;2:e113.
63. Delacroix S, et al. Hypertension: Pathophysiology and treatment. *J Neurol Neurophysiol.* 2014;5:250.

64. Lu B, et al. Therapeutic potential of topical fenofibrate eye drops in diabetic retinopathy and amd rat models. *J Clin Exp Ophthalmol.* 2014;5:347.
65. Fiorino P and Evangelista FS. Complications of type 1 diabetes mellitus are associated with renin angiotensin system: The role of physical exercise as therapeutic tool. *Pancreat Disord Ther.* 2014;4:133.
66. Mythili S, et al. Salivary heart fatty acid binding protein - a novel biomarker of myocardial damage. *Oral Hyg Health.* 2014;2:141.
67. Cecilia B, et al. Menopause in HIV infected women: A comprehensive approach to physical and psychological health. *J Osteopor Phys Act.* 2014;2:117.
68. Skultetyova D, et al. The impact of blood pressure on carotid artery stiffness and wave intensity in patients with resistant hypertension after renal sympathetic denervation. *J Hypertens.* 2014;3:157.
69. Togliatto G, et al. Unacylated ghrelin (unag): A new treatment option for peripheral arterial disease? *J Mol Genet Med.* 2014;8:108.
70. Ritu M and Manika M. Blood homocystiene and lipoprotein (a) levels, stress and faulty diet as major risk factors for early cardiovascular diseases in Indians. *J Cardiovasc Dis Diagn.* 2014;2:163.
71. Stoll DP, et al. The importance of psychological assessment and support in patients suffering from cardiovascular disease or undergoing cardiac treatment. *J Cardiovasc Dis Diagn.* 2014;2:161.
72. Han J, et al. Stem cell therapy in cardiovascular diseases: The reparative mechanisms of mesenchymal stem cells for myocardial infarction treatment. *J Cell Sci Ther.* 2014;5:167.
73. Tan W, et al. Chemoradiotherapy-associated cardiovascular toxicity: A need of cardio-oncology to improve. *J Clin Exp Cardiol.* 2014;5:320.
74. Zeng H, et al. Technetium-99m labeled fatty acid analogues for spect imaging in heart and liver. *Med chem.* 2014;4:481-486.
75. Tsutsui M, et al. Roles of nitric oxide synthases in arteriosclerotic vascular disease: Insights from murine genetic models. *J Clin Exp Cardiol.* 2014;5:318.
76. Patel NKJ, et al. Metabolic syndrome and its impact on cardiovascular diseases. *J Metabolic Synd.* 2014;3:142.
77. Iwai T and Umeda M. Smoking, periodontitis and vascular disease - collaboration study with dentists and vascular surgeons. *J Interdiscipl Med Dent Sci.* 2014;2:113.
78. Graidis C, et al. Prevalence and characteristics of coronary artery anomalies in an adult population undergoing multidetector-row computed tomography for the evaluation of coronary artery disease. *BMC cardiovascular disorders.* 2015;15:112.
79. Akpınar I, et al. Differences in sex, angiographic frequency, and parameters in patients with coronary artery anomalies: single-center screening of 25 368 patients by coronary angiography. *Coronary artery disease.* 2013;24:266-271.
80. Forbang NI, et al. The downward shift of the aortic bifurcation, a possible marker for vascular aging. *J SurgRadiol.* 2011;2:372-377.
81. Golledge J, et al. Abdominal aortic aneurysm: Pathogenesis and implications for management. *Arterioscler Thromb Vasc Biol.* 2006;26:2605-2613.
82. Kornreich L, et al. Effect of normal ageing on the sites of aortic bifurcation and inferior vena cava confluence: A CT study. *Surg Radiol Anat.* 1998;20:63-68.
83. Silverman MG, et al. Impact of coronary artery calcium on coronary heart disease events in individuals at the extremes of traditional risk factor burden: The multi-ethnic study of atherosclerosis. *Eur Heart J.* 2014;35:2232-2241.
84. Mattace-Raso FU, et al. Arterial stiffness and risk of coronary heart disease and stroke: The Rotterdam study. *Circulation.* 2006;113:657-663.
85. Ikonomidis I, et al. The evaluation of pulse wave velocity using arteriograph and complior apparatus across multiple cohorts of cardiovascular-related diseases. *Int J Cardiol.* 2013;168:4890-4892.
86. Boutouyrie P, et al. Obtaining arterial stiffness indices from simple arm cuff measurements: The holy grail? *J Hypertens.* 2009;27:2159-2161.
87. Stroun M, et al. About the possible origin and mechanism of circulating DNA apoptosis and active DNA release. *Clin Chim Acta.* 2001;313:139-142.
88. Chandrananda D, et al. High-resolution characterization of sequence signatures due to non-random cleavage of cell-free DNA. *BMC Med Genomics.* 2015;8:29.
89. Alvarado-Vásquez N. Circulating cell-free mitochondrial DNA as the probable inducer of early endothelial dysfunction in the pre-diabetic patient. *ExpGerontol.* 2015;69:70-78.

90. Uzuelli JA, et al. Circulating cell-free DNA levels in plasma increase with severity in experimental acute pulmonary thromboembolism. *Clin Chim Acta*. 2009;409:112-116.
91. Montorsi P, et al. Drug-eluting balloon for treatment of in-stent restenosis after carotid artery stenting: preliminary report. *J Endovasc Ther*. 2012;19:734-742.
92. Liistro F, et al. Drug-eluting balloon in peripheral intervention for below the knee angioplasty evaluation (debate-btk): A randomized trial in diabetic patients with critical limb ischemia. *Circulation*. 2013;128:615-621.
93. Hudorovic N, et al. In situ cephalic vein bypasses from axillary to the brachial artery after catheterization injuries. *Interact Cardiovasc Thorac Surg*. 2010;11:103-105.
94. Jain KM, et al. Long-term follow-up of bypasses to the brachial artery across the shoulder joint. *Am J Surg*. 1996;172:127-129.
95. Skudder PA, et al. Tibial artery false aneurysm: uncommon result of blunt injury occurring during athletics. *Ann Vasc Surg*. 1999;13:589-591.
96. Joglar F, et al. The role of stent grafts in the management of traumatic tibial artery pseudoaneurysms: Case report and review of the literature. *Vasc Endovascular Surg*. 2010;44:407-409.
97. Fraser JD, et al. Traumatic pseudoaneurysm of the anterior tibial artery treated with ultrasound-guided thrombin injection in a pediatric patient. *J Pediatr Surg*. 2009;44:444-447.
98. Sigterman TA, et al. Anterior tibial artery aneurysm: case report and literature review. *Int J Surg Case Rep*. 2013;4:243-245.
99. Jang EC, et al. Pseudoaneurysm of the anterior tibial artery after ankle arthroscopy treated with ultrasound-guided compression therapy. A case report. *J Bone Joint Surg Am*. 2008;90:2235-2239.
100. Gasper WJ, et al. Management of infrapopliteal peripheral arterial occlusive disease. *Curr Treat Options Cardiovasc Med*. 2014;14:136-148.