Report of Committee on Nomenclature of The American Society for the Study of Arteriosclerosis

Tentative Classification of Arteriopathies

IT is recognized that all classifications of diseases are tentative and subject to change as new contributions alter concepts of etiology and pathogenesis. This classification is presented as a summary of current opinions not only of the members of the committee but of many other physicians who have been interested in and have worked with various phases of the broad problem of arterial diseases.

This proposed classification covers a restricted area and aims at a concise definition of clinical pathological entities rather than an all-inclusive coverage of the whole area of vascular lesions, the functional as well as the organic.

There is no frank conflict between this classification of arteriopathies and the one distributed by the American Heart Association. It neither does nor does not have the endorsement of the A. H. A.

A. Degenerative Arteriopathies

1. Atherosclerosis

A disease, primarily of large arteries, characterized by plaquelike intimal deposits which contain neutral fat, cholesterol, lipophages, and sometimes blood or other evidence of hemorrhage. The lesions may remain stationary or enlarge, fibrose or calcify. They may encroach upon the lumen. The intimal surface commonly degenerates, predisposing to thrombotic occlusion. Factors which are considered in the pathogenesis are:

(1) Heredity, sex, body type and age,
(2) Disturbance in lipid and carbohydrate metabolism,
(3) High caloric and high fat intake,
(4) Various endocrinopathies,
(5) Intravascular pressure and
(6) Mural lesions.

2. Medial Calcific Sclerosis (Moenckenberg's)

A disease characterized by widespread focal calcification and fibrosis in the media of muscular arteries particularly in the legs. The calcification sometimes appears as circumferential rings. This is most commonly a disease of adult life which tends to progress with aging. The etiology is unknown. Reduction of the arterial lumen is rare but may occur usually from concomitant atherosclerosis.

3. Arterionecrosis

(1) Cystic Medionecrosis. A disease characterized by myxomatous degeneration, often with cyst formation, of the medial coat of the aorta. It is the major cause of dissecting aneurysms and thus sometimes of aortic insufficiency. The etiology is unknown. The condition may occur in adults of any age; it has an increased incidence in the terminal months of pregnancy and is associated with hypertension.

(2) Toxie Arterionecrosis. A state characterized by degenerative and necrotic lesions in various parts of all of the coats of the arteries ascribed to exogenous or, possibly, endogenous (renal, adrenal) toxins.

(3) Arterionecrosis of Physical Origin. Arterionecrosis produced by gross mechanical or thermal trauma.

(4) Arteriolar Necrosis (Arteriolonecrosis). The characteristic lesion of hypertensive disease of varied origins which is clinically manifest as 'malignant' or 'accelerated' hyperten-
sion. The most severe changes are found in renal intralobular arteries and afferent arterioles, although lesions occur in other regions (splanchnic and renal arterioles). The essential lesion is intramural fibrinoid necrosis, often associated with perivascular fibrinoid smudges and with corresponding zones of hemorrhage and intravascular thrombosis. These changes are usually superimposed on hyperplastic arteriopathy. Arterial hypertension is a basic common factor in the genesis of arteriolar necrosis, although endogenous toxic factors seem to predispose to its occurrence, sometimes in the absence of severe increases of arterial pressure.

B. Productive or Hyperplastic Arteriopathy (Hypertensive Vascular Disease)

Abnormalities primarily affecting systemic small arteries and arterioles. In arteries, these are manifested by muscular hyperplasia which progresses to medial fibrosis, reduplication of the internal elastic lamina and intimal proliferation; in arterioles, there appear muscular hyperplasia and, later, hyaline degeneration. These are associated with, or result from, increased arterial pressure. Pulmonary arteries may be involved in diseases associated with increased pulmonary arterial pressure. In such conditions, remediable thickening of vessel walls may be observed.

C. Inflammatory Arteriopathies

1. Infectious

(1) Syphilitic. Widespread vascular abnormalities characterized primarily by adventitial cellular infiltration, especially by plasma cells. The principal defects are manifest in the thoracic aorta and meningeal vessels. In the aorta, the gross changes follow on obliteration of vasa vasorum and consist in destruction of the elastica with a tendency to aneurysm formation or valvular insufficiency of the aortic commissures.

(2) Bacterial. Local acute inflammatory and destructive changes in arteries throughout the body. These follow on local invasion of various bacteria, particularly pathogenic cocci. Mycotic aneurysm often develop at the sites of damage.

(3) Plasmodial. This usually involves small arteries and is associated with agglutination of red cells in cases of severe or terminal malarial infestation.

(4) Viral. Arteritis, usually involving small arteries, and caused by local damage by rickettsial and virus infections.

2. Attributeable to Abnormal Tissue Responses (Hypersensitivity)

(1) Polyarteritis Nodosa (periarteritis nodosa; essential panarteritis). Characterized by inflammation of small arteries with cellular infiltration, at first mainly periarterial, with subsequent segmental necrosis of the medial coat. Aneurysms may develop in the weakened vessels; healing is by fibrosis or obliteration. Many cases represent hypersensitivity reactions to drugs, antibiotics, foreign protein or unknown agents.

(2) Arteritis Associated with Systemic Lupus Erythematous. Part of a widespread disease characterized by collagen necrosis, low grade inflammatory changes, and, sometimes, intimal proliferation and thrombosis.

(3) Arteritis Associated with Scleroderma and Acrosclerosis. Affecting small and medium sized arteries, usually of the extremities, and characterized by fibrosis of the adventitia, slow endothelial proliferation and arterial occlusion which may lead to tissue ischemia and sometimes gangrene.

(4) Arteritis Associated with Rheumatic Fever. Inflammatory and productive arteritis complicating rheumatic fever and manifesting itself mainly in coronary, cerebral or renal arteries.

(5) Thromboangiitis Obliterans. A recurrent segmental, obliterative panangiitis involving the arteries and veins of extremities, rarely of the viscera. It occurs almost exclusively in young adult males and leads to tissue ischemia and sometimes gangrene. The complete etiology is unknown; currently the use of tobacco by sensitive individuals is considered the most important etiologic factor.

(6) Cranial Arteritis. (Giant-cell arteritis; temporal arteritis) A panarteritis present chiefly in the arteries of the head and scalp and occasionally in those of other parts of the body.
The lesions have the histologic appearance of granulomas, contain giant cells and produce considerable periarтерial inflammation and sometimes endothelial proliferation. This may go on to vascular occlusion which may be precipitated by earlier thrombosis. It is seen almost exclusively in the elderly in whom it causes headache and sometimes sudden loss of vision, more rarely loss of hearing. The etiology is unknown.

3. Traumatic Arteritis

(1) Chemical. Arteritis associated with or resulting from chemical injuries of the arteries, and due either to local contact from injection of chemical solutions or indirectly to the absorption of toxic chemicals.

(2) Physical. Arteritis resulting from exposure to various physical agents: light, heat, cold, x-ray and radioactive substances.

(2) Mechanical. Arteritis due to mechanical injury by direct impact or as a result of cavitation from high-velocity missile wound.

4. Undetermined or Uncertain Origin

(1) Thrombotic Thrombocytopenic Purpura. A relatively uncommon disease of the arterioles and capillaries characterized pathologically by collagen changes in the intima which are associated with localized endothelial proliferation, extensive platelet deposition and occlusion of involved vessels. There is secondary thrombocytopenia with purpura.

(2) Nodular Vasculitis. Occurs chiefly in older women and belongs to the category of nontuberculous nodosities. The lesions are more painful, of shorter duration and have less tendency to ulcerate than those seen in erythema induratum. The histologic picture, however, is similar to erythema induratum.

(3) Aortic Arch Arteritis (Young female arteritis; pulseless disease). A relatively rare proliferative arteritis involving the intimal and medial coats, affecting almost exclusively the aortic arch and its major branches, often leading to thrombosis and occlusion of one or more of these branches; sometimes occlusion of the coronary ostia develops. The condition occurs almost exclusively in young or middle aged women. The etiology is unknown.

D. Primary Thromboembolic Arteriopathies

1. Embolism

(1) Detached thrombus or vegetation
(2) Air
(3) Fat
(4) Foreign bodies

2. Essential Arteriothrombosis (in situ)

Such as is seen in polycythemia vera and other conditions where there is hypercoagulability of the blood.

E. Combined Forms of Arteriopathies

Combination of any of the aforementioned arteriopathies. The combination of atherosclerosis and medial arteriosclerosis or arteriosclerosis is frequent, and suggest that medial lesions may often determine the localization of atheroma in susceptible individuals.

The Committee on Nomenclature of The American Society for the Study of Arteriosclerosis.

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Circulation. 1955;12:1065-1067
doi: 10.1161/01.CIR.12.6.1065

Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circ.ahajournals.org/content/12/6/1065.citation

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