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CONTENTS

GERIATRIC ASPECTS IN VASCULAR PATHOLOGY

Localized arteriosclerotic damage in the pathogenesis of "cascade failures" in aged patients

G. Barbagallo-Sangiorgi, F. Durante, G. Frada', G. Costanza, E. Putignano and M. Barbagallo

745

Atherosclerosis in geriatric patients

P. Tanganelli, G. Bianciardi, L. Giarelli, M. Salvi, L. Centi, F. Silvestri and G. Weber

753

Does the practice of cerebral functions prevent brain aging?

F. Pennese, M.L. Del Re, C. Di Gregorio and G. Abate

761

Critical leg ischemia in the geriatric patient: Choices, costs, consequences

M.J. Verta Jr., D. Georgeson and S. O'Malley

767

Experience with surgical treatment of gerontologic patients with the abdominal aortic aneurysm

A.V. Pokrovsky, R.S. Ermoljuk and A.S. Salamov

773

Aorto-iliac surgery in the elderly patient

G. Credi, A.A. Innocenti, E. Ferrari, G. Covucci, A. Sabato, C. Pratesi and D. Bertini

781

Revascularisation surgery in patients over 75

P. Patrone and F. Baglietto

787

DRUGS ACTIVE ON THE HEART AND PERIPHERAL CIRCULATION

Reversal of peripheral vasospasm induced by beta blockade after long-term combined alpha- and beta blockade with labetalol

K. Eliasson, B. Hylander, M. Danielson and L.E. Lindblad

795

Dihydropyridine calcium antagonists and arterial haemodynamics in hypertensive patients

E. Arosio, P. Pancera, G. Arcaro, F. Priante, G. Montesi, M. Zannoni and A. Lechi

801

Placebo-controlled, double-blind comparison of nicardipine and captopril in normotensive patients with intermittent claudication

D. Bernardi, P. Bartoli, A. Ferreri, A. Brandinelli Geri and A. Ieri

807

Calcium antagonists and peripheral circulation: Acute effects of nifedipine, verapamil and diltiazem in human volunteers

K.-O. Hausteine, T. Klaus, U. Winkler and G. Hüller

815

Distensibility of large arteries after nicardipine SR. Effects of 18 months of treatment in elderly hypertensive patients <i>R. Carretta, F. Vran, M. Bardelli, S. Muiesan, B. Fabris, F. Fischetti, G. Bulli and L. Campanacci</i>	821
Calcium antagonists and arterial compliance in hypertension <i>E. Nardi, G. Noto, G. Alaimo, S. Novo and A. Strano</i>	827

VASCULAR DEMENTIA: PATHOLOGICAL, CLINICAL AND THERAPEUTICAL ASPECTS

Pathogenesis and clinical aspects of vascular dementias <i>G. Abate, M.L. Del Re, F. Pennese, C. Di Gregorio, M. Zito and M.A. Cavoni</i>	835
Neurochemical changes in brain tissue from patients with vascular dementia of a non-mid type <i>I. Karlsson, C.-G. Gottfries, L. Svennerholm and A. Wallin</i>	841
Vascular dementia and oxidative brain metabolism <i>S. Hoyer</i>	847
Multicenter placebo controlled clinical study with buflomedil in the treatment of mild multi-infarct dementia <i>D. Cucinotta, C. Franzini, F. Pedrazzi, O. Ponari, M. Capodaglio, P. Valdina, J. Toxiri, L. Bartorelli, Q. Granata, M.A. Aveni Casucci, R. Terranova and S. Reggio</i>	853

ARTERIAL HYPERTENSION: PERIPHERAL CIRCULATION AND VASCULAR COMPLICATIONS

Different pattern of calf haemodynamics in recent and permanent hypertension <i>S. Novo, A. Pinto, M.G. Abrignani, D. Galati, G. Alletto, M. Barbagallo and A. Strano</i>	861
Arterial compliance in elderly patients with isolated systolic hypertension <i>S. Novo, E. Nardi, G. Noto, F. Zingone, M. Abrignani and A. Strano</i>	869
Arterial compliance and its relationship with the severity of the hypertensive state <i>S. Novo, R. Scaglione, M.G. Abrignani, M. Liquori, V. Sanguigni, G. Licata and A. Strano</i>	875
Haemodynamic effects of captopril in elderly hypertensives <i>C. Longhini, G. Musacci, L. Ansani, D. Mele, M. Vaccari, S. Aggio and E. Baracca</i>	881
Acute administration of enalapril and atenolol: Changes in peripheral haemodynamics <i>P. Pancera, E. Arosio, F. Priante, M. Ribul, A. Vantini, M. Zannoni and A. Lechi</i>	887
Behaviour of venous pressure at the arm in subjects affected with systo-diastolic essential hypertension and in elderlies with isolated systolic hypertension compared to healthy control subjects <i>S. Novo, F. Cosentino, G. Alaimo and A. Strano</i>	893

Prevalence and natural course of carotid atherosclerosis in asymptomatic hypertensives	
<i>L. Lusiani, A. Visona, A. Bonanome and A. Pagnan</i>	899
Non invasive evaluation of carotid atherosclerosis by means of high resolution B-M ultrasonography in 2000 patients	
<i>R. Catalini, S. Sturbini, P. Dessi' Fulgheri, C. Boria, B. Orazi, P. Russo and A. Rappelli</i>	903
Correlation between blood pressure measurements and cardiovascular damage in essential hypertension	
<i>G. Cerasola, G. D'Ignoto, L. Grasso, S. Cottone, E. Carapelle, A. Pinto, E. Nardi, G. Andronico, M.T. Mangano and A. Contorno</i>	907
Change in damping factor of Windkessel system and cardiovascular dynamics by aging in essential hypertension	
<i>J. Muramatsu, N. Hasegawa, A. Kobayashi, N. Tsukahara, S. Hiramatsu, T. Kurosawa and R. Kikawada</i>	913
Effect of sympathetic stimuli on platelet activation in patients with essential hypertension or peripheral vascular disease	
<i>M. Catalano, S. Belletti, U. Russo, F. Colombo, G. Mara and A. Libretti</i>	919
Hypertension and peripheral arterial disease	
<i>A. Libretti and M. Catalano</i>	925
Renovascular abnormalities in hypertensive patients: Assessment by single-dose captopril-scintigraphy	
<i>L.S. Malatino, B. Stancanelli, G. Greco and G. Tamburino</i>	929
Renal scintigraphy (RS) with captopril in the evaluation of renovascular hypertension (RVH)	
<i>A. Stella, M. Mirelli, M. Dondi, R. Franchi, N. Monetti and A. Minnucci</i>	933
PTA for treatment of renovascular hypertension - Statement from the viewpoint of vascular surgeon	
<i>H.-W. Menges, W. Jaschke, D. Ockert, W. Henrich and M. Trede</i>	941
Reconstructive procedures on the renal arteries done in children and adolescents with vasorenal hypertension	
<i>A.A. Spiridonov</i>	949
Reconstructive surgery for renovascular hypertension and influence of age, sex and histopathology upon late results	
<i>G.E. Poulas, E. Prombonas, N. Doundoulakis, B. Skoutas, K. Papaioannou and H. Hadat</i>	955
Antihypertensive therapy worsens blood flow in arteriopathic limbs	
<i>E. Casiglia, F. Buzzaccarini, M.G. Stefanini and A.C. Pessina</i>	961

DISEASE OF THE LYMPHATIC VESSELS

Differential diagnosis of different forms of primary lymphedema by intravital fluorescence microlymphography	
<i>G. Pfister, B. Saesseli, U. Hoffmann, M. Geiger and A. Bollinger</i>	965

Lymphoscintigraphic data in primary lymphoedema before and after physical therapy	
<i>C. Allegra, G. Pollari, P. Eleuteri and P. Villeggia</i>	971
Improved leg support with the use of graduated removable elastic bandages: An essential therapeutical element in veino-lymphatic diseases	
<i>J.P. Henriot</i>	977
The reduction of lymphoedema and elephantiasis by the benzo-pyrones	
<i>J.R. Casley-Smith and Judith R. Casley-Smith</i>	983
Primary lymphedema of the lower limb: Our therapeutic trends	
<i>G. Lucertini, F. Bonanno, M. Maio, A.M. Cristiani and P. Belardi</i>	989
Intraarterial lymphocyte injection for treatment of chronic lymphedema	
<i>Kitamura, H. Suesada, N. Akimoto, M. Konishi and K.-I. Furukawa</i>	995
Reconstructive lymphatic microsurgery: A new personal method	
<i>C. Campisi</i>	1001

EXPERIMENTAL ANGIOLOGY

Role of endothelium in control of vascular tone	
<i>J.T. Shepherd</i>	1011
Aortic antioxidant defense mechanisms in rabbits subjected to suprarenal aortic coarctation hypertension	
<i>F. Cuccurullo, E. Porreca, D. Lapenna, A. Pennelli, G. Ricci and G. Del Boccio</i>	1017
New potentials in phototherapy of atheromas	
<i>A. Visona, V. Cuomo, G. Zanetti, L. Lusiani, A. Pagnan and G. Iori</i>	1021
The morphological response of the arterial wall of spontaneously hypertensive rats (SHR) to treatment with a converting enzyme (CE) inhibitor (enalapril): An ultrastructural investigation	
<i>H. Arnold-Schmiebusch</i>	1025
The influence of cholesterol on the vascular anastomotic region	
<i>H. Minakuchi, S. Tominaga, S. Oka, H. Nishimura, S. Kume and Y. Mishima</i>	1031
The effect of high molecular, low molecular and unfractionated heparin on microarterial anastomosis in rats	
<i>M.N. Pamir, A.F. Özer, T. Erbençi, F. Toulemond and O.N. Ulutin</i>	1037
Experimental study on polytetrafluoroethylene microvascular prostheses in the infrarenal aorta of rats	
<i>R. Rosati, V. Filingeri, E. Davoli and C.U. Casciani</i>	1043
Endothelial seeding of Dacron venous grafts in canine	
<i>Z. Wang and L. Pu</i>	1049
Middle cerebral blood flow, cardiac output, stroke volume, before, during and after hyperventilation	
<i>E. Manconi, P.L. Montaldo, A. Concu, L. Lota, G.A. Meloni, G. Fadda, S. Salis, M. Tronci, A. Molari, F. Binaghi and F. Pitzus</i>	1055

Peripheral catecholaminergic mechanisms and baroreflex pathways are involved in vascular and cardiac effects of long-term exposure to inorganic mercury in rats

P. Boscolo, M. Carmignani, G. Giuliano and P. Preziosi 1061

Individual reactivity of total peripheral vascular resistance to psychophysiological stress

M. Mäntysaari and E. Länsimies 1067

VASCULAR TRAUMA

Vascular injuries in childhood

M. Bertonni, L. Pedrini, V. Loperfido, E. Piano and A. Sacca 1075

Blunt traumatic dissection of the internal carotid artery with delayed symptoms

E. Pozzati 1079

Popliteal artery entrapment and thrombosis in teenagers: Report of three cases

P. Apostolidis, K. Tsoalias, A. Papathanassiou, K. Karassavas and H. Louis 1081

Arterial injuries due to fractures caused by blunt trauma of the extremities

M. Kurtoglu, S. Belgerden, M. Özgür, C. Ertekin and S. Yamaner 1085

Venous injuries

F. Pukacki, T. Lyczkowski, M. Napierala, W. Majewski, G. Oszkinis and W. Podstawski 1089

THERMALISM IN ANGIOLOGY

Effects on various cutaneous sores from an original thermal treatment in Royat (France)

P.B. Avril, J. Cheynel, J. Body, J.-J. Dubost, R. Delahaye and R. Fabry 1097

Vascular responses induced by transcutaneous CO₂ diffusion

J. Coudert, M. Bedu, J. Cheynel, E. Savin and J.-P. Martineaud 1103

Transcutaneous CO₂ diffusion: Comparison between CO₂ spa water and dry gas in Royat thermal spa

M. Bedu, J. Cheynel, J.-P. Gascard and J. Coudert 1109

Walking against a mineral water current: A new form of treatment in Royat (France)

P.B. Avril, A.-M. Poyet and R. Fabry 1115

HAEMORHEOLOGY AND VASCULAR DISEASE

Choline uptake and choline incorporation into erythrocytes membranes. Relation to an increase of red cell deformability

J.R. Rapin, I. Chassin, R. Yoa and P. Lespinasse 1123

Erythrocyte indexes and hemorheological tests <i>V. Bartoli, L. Mannini, F. Fantoni and G. Avanzi</i>	1129
Hemorheological parameters in hyperlipoproteinemia: Results from the MONICA-project Augsburg/FRG <i>W. Koenig, M. Sund, E. Ernst, W. Mraz, A. Döring, U. Keil and V. Hombach</i>	1135
Haemorheological and haemocoagulative components in the pathogenesis of vascular cerebral thromboembolic events <i>G. Avellone, R. Cordova, V. Di Garbo, R. De Simone, G. Raneli and A. Strano</i>	1141
Rheology of erythrocytes and granulocytes in cerebral multiinfarction <i>P. Koeltringer, W. Langsteger, P. Lind, G. Klima, O. Eber and F. Reisecker</i>	1147
Leukorheology in peripheral occlusive arterial disease <i>M.A. Perego, C. Danese, M.S. Volpe, M.T. Landi and A. Traversa</i>	1149
Erythrocyte aggregation in vascular diseases. Chronobiological, treadmill test and atrial pacing studies <i>R.A. Mangiàfico, A. Peralito, G. Russo, R.S. Spada, M. Santonocito, C. Tamburino and G. Tamburino</i>	1157
Erythrocyte membrane fluidity and red cell membrane lipids in NIDDM complicated by vascular atherosclerotic disease (VAD) <i>G. Caimi, R. Lo Presfi, S. D'Asaro, A. Serra, A. Catania, G. Francavilla and A. Sarno</i>	1163
Behaviour of haemorheological parameters in diabetic pregnant women <i>R. Terranova, C. Cammisuli, G. Terranova and L. Attanasio</i>	1169

MICROCIRCULATION

Cutaneous microcirculatory flowmetry evaluated by laser Doppler technique in 100 healthy volunteers <i>A. Maurel, P. Hamon, I. Macquin-Mavier, G. Lagrue and C.H. Mondor</i>	1177
Leukocytes and microcirculation in aging <i>M.A. Perego, C. Danese, M.S. Volpe, M.G. Panciocco and A. Traversa</i>	1183
Effects of metformin on microcirculation during hemorrhagic shock <i>S. Bertuglia, A. Colantuoni and L. Donato</i>	1189
Evaluation of the lung microvascular status using radiolabelled monoclonal antibody to angiotensin-converting enzyme <i>V. Muzykantov, E. Puchnina, E. Atochina, I. Sakharov and S. Danilov</i>	1195
Transmicrovascular exchange in the extremities of patients with obliterating atherosclerosis <i>K. Roztocil, I. Prerovsky and J. Linhart</i>	1201
Reduced cutaneous flow motion in patients with arterial occlusive disease <i>P. van den Brande and I. Vandenhove</i>	1205

Study by means of nailfold capillary microscopy in the connective tissue diseases in childhood

A. Costantini, A. Nardini, M. Vescovi, P. Bavera and M. Bardare 1211

Is the evidence of vasospasms in the eye the expression of a generalized vasospastic disorder?

P. Gasser, J. Flammar and F. Mahler 1215

Acrocyanotic disease: Experimental findings

C. Allegra, A. Carlizza, G. Pollari and A. Inglese 1221

Impaired neurogenic microvascular response in patients with dysautonomia

L. Santambrogio, G. Bellomo, M. Timi, O. Regni and E. Mannarino 1225

MULTIFOCAL ATHEROSCLEROTIC DISEASE

Asymptomatic lesions of the iliac arteries

A.M. Raso, G. Sisto, M.A. Bello Silva and P.L. Castagno 1231

The symptomatic and the asymptomatic multilocalized character of the atherosclerosis disease: A clinical study

M. Andreola, V. Antonini, M. Bonifacio, A. Carlizza, A. Criscuolo, M.A. Palange and C. Allegra 1237

Hypercholesterolemia and carotid artery disease in patients with obliterating arterial disease of the lower limbs

F. Faccenda, G. Leccia, L. Carbone, A. Iannuzzi, P. Rubba and M. Mancini 1243

TL-201 scintigraphy for the simultaneous detection of coronary and peripheral arterial diseases

S. Novo, A. Pinto, M.G. Abrignani, A. Indovina, G. Alletto, M. Liquori, G. Parrinello, F. Giuliano, M. Barbagallo, G. Licata and A. Strano 1249

Noninvasive detection of concomitant coronary artery disease in patients with intermittent claudication

A.-M. Salmasi and A.N. Nicolaides 1255

Coronary artery disease and peripheral obstructive arterial disease: An angiographic and clinical study

F. Romeo, G. Rosano, B. Bonfigli, F. Barilla, D. Romeo, L. Lombardo, A. Valente and A. Reale 1261

Carotid artery involvement in patients with ischaemic heart disease (IHD) undergoing coronarography

P. Pancera, E. Arosio, F. Priante, M. Zannoni, G. Arcaro, I. Sheiban, P. Benussi and A. Marini 1265

Colour flow imaging in the assessment of chronic venous insufficiency

S.N. Vasdekis, J.T. Hobbs and A.N. Nicolaides 1271

Long-term results of coronary bypass graftings in the patients with multifocal atherosclerotic vascular disease

Y. Kito, K. Ohara, K. Kawazoe, Y. Kosakai and T. Fujita 1277

Simultaneous treatment of internal carotid artery stenosis and coronary artery disease

F. Dapper, H.-W. Nestle, A. Thiel, F.-W. Hehrlein

1285

Surgery for combined stenotic atherosclerotic lesions of peripheral and coronary arteries

*A.A. Spiridonov, V.P. Kerstman, L.I. Kleoner, G.P. Vlasov,
V.I. Rusin, A.V. Danilkin, A.S. Matveevsky and O.M. Nesuk*

1291

AORTIC ANEURYSMS

Ultrasound screening for abdominal aortic aneurysms: The results of screening in 2056 people

R.A.P. Scott, H.A. Ashton and D.N. Kay

1299

The treatment of abdominal aortic aneurysms: Late results

*D. Bertini, E. Ferrari, G. Credi, R. Pulli, C. Pratesi, L. Capaccioli,
M. Bartolini, L. Lascialfari and N. Villari*

1303

Follow up of 140 aortic abdominal aneurysms during a period of 14 years

*E. Viver, S. Llagostera, L. Olba, J. Marinello, J.R. Escudero and
E. Sala Planell*

1307

Surgical treatment of ascending aortic aneurysms with aortic insufficiency: Clinical results

*O. Isik, M. Balkanay, T. Berki, H. Tanugur, O. Bayezid, M. Tuzo
and C. Yakut*

1311

Management of acute dissecting aneurysms of the thoracic aorta - 15-year experience

T. Kazui and S. Komatsu

1317

The "thrombosed type aortic dissection", its clinical features and long term follow up results

N. Nakajima, H. Matsuo, M. Takamiya and K. Hiramori

1325

Prognosis of dissecting aneurysms of the aorta by medical treatment

*S. Watanabe, Y. Inagaki, Y. Masuda, N. Morooka, Y. Aoyagi,
J. Takasu, H. Imai and M. Sakakibara*

1331

The surgical treatment of nonatherosclerotic aneurysms of the descending thoracic aorta and the distal aortic arch

*A.A. Spiridonov, A.S. Yaroshchuk, M.V. Boot-Gusaim and
V.S. Arakelyan*

1337

VASCULAR MALFORMATION

Exploration of Budd-Chiari syndrome

Z. Wang

1345

Therapeutical strategy, surgical tactics and operative techniques in congenital vascular defects (multicentre study)

*S. Belov, D.A. Loose, R. Mattassi, J. Spatenka, G. Tasnadi and
Z. Wang*

1355

Surgical therapy of arteriovenous congenital defects	
<i>G. Vercellio, M. Coletti and G. Agrifoglio</i>	1361

RISK FACTORS OF ATHEROSCLEROSIS

Atherogenic changes in arterial cells caused by modified (desialylated) low density lipoprotein circulating in the blood of atherosclerotic patients	
<i>A. Orekhov, V. Tertov and D. Mukhin</i>	1369
Hypertriglyceridemia and cardiovascular disease	
<i>A. Notarbartolo, M. Averna and G. Davi</i>	1375
Diabetic hyperglycemia as a risk factor for atherogenesis: Lessons from an in vitro model and therapeutic implications	
<i>M. Lorenzi, E. Cagliero, M. Maiello and D. Boeri</i>	1381
Dietary and drug treatment of dyslipidemias	
<i>E. Manzato, S. Zambon, A. Zambon and G. Crepaldi</i>	1389
Pharmacological treatment of arterial hypertension	
<i>A.C. Pessina and G. Rossi</i>	1395

ANTIPLATELET DRUGS

Thromboxane biosynthesis and metabolism in health and disease	
<i>C. Patrono</i>	1407
Antiplatelet drugs in peripheral vascular disease	
<i>G. Davi, M. Belvedere, A. Notarbartolo and A. Strano</i>	1411
Effects of dipyridamole and 3-morpholinol-syd-nonimine (SIN-1) on platelet - Endothelial cells interaction	
<i>C.M. Kirchmaier, I. Altorjay, K. Krupinski, O. Bellinger and H.K. Breddin</i>	1417
Effect of ticlopidine, and antiplatelet drug, on graft patency after arterial reconstruction in the lower extremity: A three-year multi-center prospective study	
<i>S. Shiionoya, T. Sakurai, H. Hirose, M. Kusakawa, M. Numata, S. Sakaguchi, H. Tsuchioka, T. Ueyama and S. Yoshizaki</i>	1423
Index of authors	1429

GERIATRIC ASPECTS IN VASCULAR PATHOLOGY

LOCALIZED ARTERIOSCLEROTIC DAMAGE IN THE PATHOGENESIS OF "CASCADE FAILURES" IN AGED PATIENTS

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INTRODUCTION

Geriatric patients are characterized by several peculiar clinical conditions and particularly by the risk of complications, by iatrogenic injuries, by the frequent onset of diseases caused by immobilization, by the risk of falls and their consequences, by mental confusion and urinary incontinence, by the tendency to develop chronic diseases and permanent invalidity and to lose self sufficiency. Moreover the simultaneous presence of medical, psychological and social problems exerts a great influence on general and clinical conditions.

CLINICAL CHARACTERISTICS OF GERIATRIC PATIENTS

Attention is now called on some peculiar clinical aspects, usually referred to as risk of complications, but actually showing their own clinical and pathogenetic features. Most diseases become particularly severe in aged subjects and their onset and course are characterized by unusual symptoms (1), such as:

- 1) the occurrence of function failures in individual organs due to slight or even irrelevant pathogenetic causes affecting that organ and determining a functional challenge exceeding the organism's functional reserve.

As a typical example we may quote the respiratory apparatus, undergoing organic damage with age. Such damage affects both the parenchymal and the structural component: functional balance becomes thus unsteady and the overall behaviour of the respiratory apparatus may be classified as latent respiratory failure. "In such condition even slight noxae (of an inflammatory, traumatic or iatrogenic nature) may determine an evolution to acute or subacute respiratory failure.

The same is true for any other senile organ (heart, kidney, brain) undergoing functional challenge and requiring slightly increased performance: thus even moderate physical efforts may cause congestive heart failure: rapid and excessive water intake may facilitate the onset of pulmonary edema, excess protein intake may cause the onset of hyperazotemia due to insufficient renal excretion, and so on.

These clinical characteristics may be referred to as proneness to "organ or metabolic failures".

2) The other feature characterizing geriatric patients is the frequent onset of "vicious circles" in cases in which any clinical event - such as pathogenetic noxae, drug intake, a painful relationship with the surrounding world - is linked back to the initial event through a complex pathophysiological connection, and potentiates its effects. It thus happens that a "per se" quite irrelevant clinical event may become increasingly severe and yield unfavourable consequences as to self-sufficiency and survival due to the perverse succession of self-potentiated events rather than to the actual importance of the primary pathological event (1).

An example of a vicious circle possibly leading to severe consequences is that deriving from a thoracic pain after a rib fracture or some contusion. Pain-avoiding attitude causes then a disorder of respiratory mechanics and hence alveolar hypoventilation, while asymmetrical expansion of the two lungs involves an increase of functional dead space.

The presence of bronchial stasis, due to reduced effectiveness of cough (checked voluntarily or using antitussive drugs) in order to avoid pain may cause tracheo-bronchial encumbrance thus worsening alveolar ventilation and favouring the onset of bronchio-pneumonical focal infections and hence development of severe acute respiratory failure.

Some perverse vicious circles may be induced by the administration of drugs - even of those most commonly used (2, 3).

Mention should be made of the effects exerted by diuretics upon the intestinal tract: diuretics induce in fact potassium depletion and hence obstinate constipation. The patient tries to correct constipation by taking laxative drugs, which worsen potassium depletion and cause colon anomalies and hence irreversible hypokinesia of the intestinal tract and further constipation.

The primary cause may be due to other drugs, such as psychotropic and anti-cholinergic agents etc., acting through mechanisms different from potassium depletion. The problem, however, is always the same, since there is always a connection of events yielding a vicious circle.

3) Another clinical feature typical of aged patients is the possibility that if a pathogenetic noxa involves a given organ, this may cause adverse effects in the function of other organs and so on.

This condition is referred to as "cascade failure" in order to give a clear idea of the pathogenetic sequence of clinical events (1, 4) The "cascade" may start at the respiratory level and induce repercussions at the cardiac, cerebral or renal level etc. Recognizing and detecting such "cascades" is particularly important because the most conspicuous symptoms are often those of an apparatus different and far from those due to the originally damaged one.

This notion can be explained by some clinical example.

Bronchopneumonia is a frequent occurrence in aged subjects and may be caused by various pathogenetic mechanisms. It is a severe illness and one of the most frequent causes of death, but it may be associated with relatively slight general and local respiratory symptoms and even temperature may be rather low in quite a number of cases. The physician's attention may thus not be called on the respiratory apparatus, particularly in cases with preexisting chronic respiratory disorders, in whom heart symptoms may prevail (onset of tachycardia and of other rhythm disorders, myocardial failure with cardiac asthma particularly in hypertensive subjects) or be associated to neuropsychic disorders (mental confusion, psychomotor agitation, marked drowsiness and coma, headache, tremors, abnormal sweating, neurological focal symptoms) and/or to urinary symptoms (incontinence and increased azotemia).