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CLINICAL HEMORHEOLOGY - LITERATURE SURVEY

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AKEMOTO, K., UYAMA, T., KOTO, K. (A study of erythrocyte deformability and its prevention during cardiopulmonary bypass.) *Nippon Kyobu Geka Gakkai Zasshi* 36: 2353-2362, 1988.
Key words: cardiopulmonary bypass, erythrocyte deformability, postoperative complications, prostaglandins (English abstract)
No address available.

BACHRACH, H.J., MYERS, J.B. and BARTHOLOMEW, W.R.* A unique case of kappa light-chain disease associated with cryoglobulinemia, pyroglobulinemia and hyperviscosity syndrome. *Am. J. Med.* 86: 596-602, 1989.
Key words: hyperviscosity syndrome, light-chain disease, serum viscosity, hemoglobin
Address for reprints: Division of Clinical Microbiology, Erie County Medical Center, Buffalo, New York 14215, USA.

BARNIKOL, W.K. Temperatur, pH-Wert, Säurebelastung und Filtrierbarkeit normaler menschlicher Erythrozyten: In-vitro-Untersuchungen - Mögliche Bedeutung für die hypertherme hyperazidotische Tumortherapie (Temperature, pH-value, acid load and filterability of normal human erythrocytes: in vitro studies - possible significance for hyperthermic hyperacidotic tumor therapy). *Arch. Geschwulstforsch.* 59: 11-17, 1989.

Key words: acid-base equilibrium, erythrocyte deformability, induced hyperthermia (English abstract)

Address for reprints: Physiologisches Institut, Johannes-Gutenberg-Universität, Mainz, FRG.

BAYER, R.*, PLEWA, S., BORCESCU, E. and CALUS, W. Filterability of human erythrocytes - drug induced prevention of aging in vitro. *Arzneimittelforschung* 38: 1765-1767, 1988.

Key words: erythrocyte aging, erythrocyte deformability, comparative study

Address for reprints: Dept. of Clinical Physiology, University of Düsseldorf, FRG.

BOETTIGER, L.E. (More known abroad than here. Robin Fahraeus - the discoverer of blood sedimentation.) *Lakartidningen* 86: 1071-1073, 1989.

Key words: blood sedimentation, hematology, historical article, biography

No address available.

BUETIKOFER, P.*, LIN, Z.W., KUYPERS, F.A., SCOTT, M.D. XU, C.M., WAGNER, G.M., CHIU, D.T. and LUBIN, B. Chlorpromazine inhibits vesiculation, alters phosphoinositide turnover and changes deformability of ATP-depleted RBCs. *Blood* 73: 1699-1704, 1989.

Key words: chlorpromazine, erythrocyte deformability, membrane lipids

Address for reprints: Children's Hospital Oakland Research Institute, CA 94609, USA.

CAIMI, G., FRANCAVILLA, G., ROMANO, A., CATANIA, A., SANTONOCITO, G. and SARNO, A. Blood rheology changes during bezafibrate treatment. *Br. J. Clin. Pract.* 42: No. 11, 1988.

Key words: bezafibrate, atherosclerotic patients, blood and plasma viscosity

Address for reprints: Via Don Orione n 65, 90143 Palermo, Italy.

CAIMI, G. Blood rheology in diabetes. *Rev. Port. Hemorheol.* 1: 103-110, 1987.

Key words: diabetes, red cell rheology, blood viscosity, glycometabolic control

Address for reprints: as above.

CAPECCHI, P.L.*, PASINI, F.L., Pasqui A.L., ORRICO, A., CECCATELLI, L., ACCIAVATTI, A., GALIGANI, C., PIERAGALLI, D. and DIPERRI, T. Allopurinol prevents ischaemia-dependent haemorheological changes. *Eur. J. Clin. Pharmacol.* 35: 475-481, 1988.

Key words: allopurinol, blood viscosity, coronary disease, in vitro

Address for reprints: Istituto di Patologia Medica, Universita di Siena Le Scotte, Italy.

CARTER, P.W.*, Cohen H.J. and CRAWFORD, J. Hyperviscosity syndrome in association with kappa light chain myeloma. *Am. J. Med.* 86: 591-595, 1989.

Key words: hyperviscosity syndrome, light chain myeloma, plasma viscosity

Address for reprints: Division of Hematology, Duke University Medical Center, Durham, North Carolina 27710, USA.

CHABANEL, A.*, SUNG, K.L., RAPIEJKO, J. PRCHAL, J.T., PALEK, J., LIU, S.C. and CHIEN, S. Viscoelastic properties of red cell membrane in hereditary elliptocytosis. *Blood* 73: 592-595, 1989.

Key words: hereditary elliptocytosis, erythrocyte deformability, osmolar concentration, rheology

Address for reprints: Dept. of Physiology and Cellular Biophysics, Columbia University, College of Physicians and Surgeons, New York, USA.

CHANUDET, X.*, BAUDUCEAU, B., GIRERD, X., CLEMENT, R., CELTON, H. and LARROQUE, P. Influence des facteurs anthropometriques des parametres hemorheologiques et du niveau de la pression arterielle sur la vitesse de propagation de l'onde de pouls (The influence of anthropometric factors, hemorheologic parameters and the level of arterial pressure on pulse wave velocity). *J. Mal. Vasc.* 14: 15-18, 1989.

Key words: anthropometry, blood proteins, blood viscosity, elasticity, erythrocyte deformability (English abstract)

Address for reprints: Service de Medecine Interne et Pathologie Cardio-Vasculaire, HIA Begin, Saint-Mande, France.

CHEN, J.F. and YE, M.F. Hemorrhological study on the effect of acupuncture in treating cerebral infarction. *J. Tradit. Chin. Med.* 8: 167-172, 1988.

Key words: acupuncture, cerebral infarction, blood viscosity, hematocrit

No address available.

CHEN, S. (Erythrocyte morphology and membrane mobility in patients with hypercholesterolemia). *Chung Hua Hsin Hsueh Kuan Ping Tsa Chih* 16: 301-303, 1988.

Key words: erythrocytes, hypercholesterolemia, membrane fluidity

No address available.

CLARK, M.R.*, AMINOFF, M.J., CHIU, D.T., KUYPERS, F.A. and FRIEND, D.S. Red cell deformability and lipid composition in two forms of acanthocytosis: enrichment of acanthocytic populations by density gradient centrifugation. *J. Lab. Clin. Med.* 113: 469-481, 1989.

Key words: erythrocytes, case report, centrifugation, cholesterol

Address for reprints: Dept. of Laboratory Medicine, University of California, San Francisco 94143, USA.

COPLEY, A.L. The 100th birthday of Robin Fahraeus (editorial). *Thromb. Res.* 52: 494-497, 1988.

Key words: hematology, history of medicine, historical biography, rheology

No address available.

DEANGELIS, V.*, ORAZI, B.M., SANTAROSSA, L., MOLARO, G.L., VILLALTA, D., SANTINI, G.F., DORETTO, P. and CAPPELLETTI, P. Time-related shape control modifications during erythrocyte storage with additive solutions. *Blut* 58: 143-146, 1989.

Key words: blood preservation, erythrocyte deformability, blood viscosity, glucose

Address for reprints: Centro Immuno-Trasfusionale, Ospedale Civile di Pordenone, Italy.

DENIS, F.*, KETARI, M., BENZAKEN, J. and RENOUE, G. Surdités brusques: a propos de 19 cas. Resultats du traitement par la pentoxifylline. Interet de la mesure du temps de filtration erythrocytaire (Sudden deafness: apropos of 19 cases. Results of treatment with pentoxifylline. Value of erythrocyte filtration time). *Ann. Otolaryngol. Chir. Cervikofac.* 106: 21-26, 1989.

Key words: sudden deafness, erythrocyte deformability, pentoxifylline, blood viscosity (English abstract)

Address for reprints: CHI de Poissy, France.

DODSON, R.A.*, HINDS, T.R. and VINCENZI, F.F. Pentoxifylline, diltiazem, and A23187: effects on deformability and volume of human red blood cells. *Proc. West Pharmacol. Soc.* 31: 205-207, 1988.

Key words: diltiazem, erythrocyte deformability, pentoxifylline

Address for reprints: Dept. of Pharmaceutical Science, College of Pharmacy, Idaho State University, Pocatello 83209, USA.

ENGELHARDT, H.* and SACKMANN, E. On the measurement of shear elastic moduli and viscosities of erythrocyte plasma membranes by transient deformation in high frequency electric fields. *Biophys. J.* 54: 495-508, 1988.

Key words: erythrocyte deformability, elasticity, reference values, viscosity

Address for reprints: Physik Department, Technische Universität München, Garching, FRG.

FEDOROVA, Z.D., ABDULKADYROV, K.M., BESSMEL'TESEV, S.S. and KOTOVSHCHIKOVA, M.A. (Changes in the rheologic properties of erythrocytes in various hematologic diseases.) *Gematol. Transfuziol.* 34: 12-17, 1989.

Key words: erythrocyte aggregation, erythrocyte deformability, hematologic diseases, blood viscosity (English abstract)

No address available.

FISCHER, T.M. Erythrocyte deformation under shear flow (letter). *Blood* 73: 1074-1075, 1989.

Key words: erythrocyte deformability, mechanical stress

No address available.

FUKUSHIMA, Y.* and KON, H. A flow EPR study of deformation and orientation characteristics of erythrocyte ghosts: effects of lysing and resealing conditions. *J. Membr. Biol.* 104: 265-273, 1988.

Key words: erythrocyte deformability, bicarbonates, calcium, flow cytometry

Address for reprints: Laboratory of Chemical Physics, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, Maryland 20892, USA.

GARCIA DIAZ, J.D. Hemorreologia, diabetes mellitus y claudicacion intermitente (Hemorreology, diabetes mellitus and intermittent claudication (letter)). *Rev. Clin. Esp.* 183: 330, 1988.

Key words: diabetic angiopathies, intermittent claudication, rheology

No address available.

GRAY, B.H.*, PORVAZNIK, M., FLEMMING, C. and LEE, L.H. Organotin-induced hemolysis, shape transformation and intramembranous aggregates in human erythrocytes. *Cell Biol. Toxicol.* 3: 23-38, 1987.

Key words: erythrocyte aggregation, erythrocyte deformability, hemolysis, in vitro

Address for reprints: Naval Medical Research Institute, Toxicology Detachment, Wright-Patterson Air Force Base, Ohio 45433, USA.

HELL*, K.M., BALZEREIT, A., DIEBOLD, U. and BRUHN, H.D. Importance of blood viscoelasticity in arteriosclerosis. *Angiology* 40: 539-546, 1989.

Key words: arteriosclerosis, blood viscosity, elasticity, fibrinogen, hematocrit, risk factors

Address for reprints: I. Medizinische Universitätsklinik Kiel, FRG.

JAHN, M., BRUNNER, R., BORBERG, H., KADAR, J., KREUTZER, A. and HOSSMANN, V. Beeinflussung hämorrheologischer und laborchemischer Parameter durch Infusionstherapie mit Serumkonserve und durch Plasmaaustausch mit Human-albumin und Serumkonserve bei Patienten mit Uveitis posterior und intermedia (Modification of hemorrheologic and laboratory chemical parameters by infusion therapy and preserved serum and by plasma exchange with human albumin and preserved serum in patients with posterior and intermediate uveitis). *Fortschr. Ophthalmol.* 85: 740-743, 1988.

Key words: blood transfusion, blood viscosity, plasma exchange, uveitis (English abstract)

No address available.

JANDAK, J.*, STEINER, M. and RICHARDSON, P.D. Alpha-tocopherol, an effective inhibitor of platelet adhesion. *Blood* 73: 141-149, 1989.

Key words: blood platelets, fibrinogen, in vitro, rheology

Address for reprints: Division of Hematology/Oncology, Brown University, Providence, RI.

JUNG, F.*, WALDHAUSEN, P., SPITZER, S., MROWIETZ, C., HÄUSER, B. and WENZEL, E. Hämorrheologische, mikro- und makrozirkulatorische Effekte einer hypervolämischen Hämodilution mit mittelmolekularer Hydroxyäthylstärke (Haes 200/0.62; 6%) (Hemorheologic, micro- and macrocirculatory effects of hypervolemic hemodilution with middle molecular weight hydroxyethyl starch (Haes 200/0.62; 6 percent)). *Infusionstherapie* 15: 265-271, 1988.

Key words: blood viscosity, hemodilution, hydroxyethyl starch, blood flow velocity (English abstract)

Address for reprints: Abt. für Klinische Hämostaseologie und Transfusionsmedizin, Universität des Saarlandes, Homburg/Saar, FRG.

KEIDAN, A.J.*, SOWTER, M.C., JOHNSON, C.S., MARWAH, S.S. and STUART, J. Pharmacological modification of oxygen affinity improves deformability of deoxygenated sickle erythrocytes: a possible therapeutic approach to sickle cell disease. *Clin. Sci.* 76: 357-362, 1989.

Key words: sickle cell anemia, erythrocyte deformability, oxygen

Address for reprints: Dept. of Haematology, Medical School, University of Birmingham, UK.

KEIDAN, A.J.*, SOWTER, M.C., JOHNSON, C.S., NOGUCHI, C.T., GIRLING, A.J., STEVENS, S.M. and STUART, J. Effect of polymerization tendency on haematological, rheological and clinical parameters in sickle cell anaemia. *Br. J. Haematol.* 71: 551-557, 1989.

Key words: sickle cell anemia, erythrocyte deformability, hemoglobin, oxygen

Address for reprints: as above.

KOALL, W.*, SCHÄBITZ, J. KUNSCH, R. and NILIUS, R. Untersuchungen zum Problem thromboembolischer Risikofaktoren bei Nierentransplantierten mit sekundärer Polyglobulie unter hämorheologischen Aspekten (Thromboembolism risk factors in kidney transplant patients with secondary erythrocytosis in relation to hemorheologic aspects). *Z. Gesamte Inn. Med.* 43: 474-477, 1988.

Key words: blood viscosity, kidney, polycythemia, thromboembolism, erythrocyte aggregation, erythrocyte deformability (English abstract)

Address for reprints: Klinik und Poliklinik für Innere Medizin, Martin-Luther-Universität Halle-Wittenberg, GDR.

KOELTRINGER, P.*, EBER, O., KLIMA, W., WAKONIG, P., LIND, P. and ROTHLAUER, W. Der hämorheologische Akuteffekt von Kalziumdobesilat (The acute hemorheologic effect of calcium dobesilate). *Acta Med. Austriaca* 15: 78-80, 1988.

Key words: blood viscosity, calcium dobesilate, hematocrit (English abstract)

Address for reprints: Krankenhaus der Barmherzigen Brüder, Graz-Eggenberg, Austria.

KOELTRINGER, P.* and EBER, O. Die Durchblutung beim Diabetiker und ihre Auswirkungen auf die Sportausübung (Blood circulation in diabetic patients and its effects on sports). *Wien Med. Wochenschr.* 138: 344-345, 1988.

Key words: blood viscosity, diabetic angiopathies, exercise, rheology (English abstract)

Address for reprints: as above.

KÖRNER, K.*, BARRAS, J.P. and JUNG, T. Rheologie gelagerter Erythrozytenkonzentrate in Plasmaersatzlösungen (Rheology of stored erythrocyte concentrates in plasma substitutes). *Beitr. Infusionsther.* 21: 43-B, 1988.

Key words: blood viscosity, erythrocytes, blood transfusion

Address for reprints: DRK-Blutspendezentrale Ulm, FRG.

KOHLSCHÜTTER, A.*, HÜBNER, C. and GÄRTNER, J. Decreased membrane fluidity of lymphocytes from patients with juvenile neuronal ceroid-lipofuscinosis. *Am. J. Med. Genet. Suppl.* 5: 203-207, 1988.

Key words: lymphocytes, membrane fluidity, reference values

Address for reprints: Dept. of Pediatrics, University of Hamburg, FRG.

KUANG, Y.L., TAN, R.Q. and YAN, W.M. A study on hemorrheology in patients with spleen Qi deficiency. *J. Tradit. Chin. Med.* 8: 235-238, 1988.

Key words: chinese traditional medicine, blood viscosity, rheology

No address available.

LANGERON, P., FERRAZ-PARENTE, J.B., AKKARI, J., MAHIEU, G. and GOHIER, M.H. Hemodilution normovolemique. Son interet en chirurgie restauratrice aorto-iliaque (Normovolemic hemodilution. Its value in reconstructive aorto-iliac surgery). *Chirurgie* 114: 174-181, 1988.

Key words: abdominal aorta, hemodilution, hematocrit, ischemia (English abstract)

No address available.

LESCHKE, M., KAFFARNIK, H. and STRAUER, B.E. Rheologische Risikofaktoren bei koronarer Herzkrankheit (Rheologic risk factors in coronary heart disease). *Fortschr. Med.* 106: 568-570, 1988.

Key words: blood viscosity, coronary disease, review (English abstract)

No address available.

LEY, K.*, LUNDGREN, E., BERGER, E. and ARFORS, K.E. Shear-dependent inhibition of granulocyte adhesion to cultured endothelium by dextran sulfate. *Blood* 73: 1324-1330, 1989.

Key words: blood flow velocity, cell adhesion, vascular endothelium, heparin

Address for reprints: Pharmacia Experimental Medicine, La Jolla, CA 92037, USA.

LIN, M.S.*, HUANG, C.S. and LEEN, D.Y. Lack of effects of calcium antagonists on red blood cell deformability in hypertension. *Int. J. Clin. Pharmacol. Ther. Toxicol.* 26: 585-587, 1988.

Key words: calcium channel blockers, erythrocyte deformability, hypertension, gravity driven filtration technique

Address for reprints: Dept. of Medicine, Cathay General Hospital, Taipei, Taiwan, ROC.

LIU, G.M., HU, S.Z. and YOUNG, S.W. (The cause and significance of hemorheologic changes in patients with hypothyroidism.) *Chung Hua Nei Ko Tsa Chih* 27: 624-626, 1988.

Key words: hypothyroidism, blood sedimentation, blood viscosity, comparative study (English abstract)

No address available.

LOSONCZY, G. Rheological mechanisms in postischemic acute renal failure. *Contrib. Nephrol.* 67: 22-27, 1988.

Key words: kidney, erythrocyte aggregation, heparin, ischemia, review

Address for reprints: Semmelweis University, Medical School, Dept. of Pathophysiology, Budapest, Hungary.

MARKIN, V.S.* and KOZLOV, M.M. Mechanical properties of the red cell membrane skeleton: analysis of axisymmetric deformations. *J. Theor. Biol.* 133: 147-167, 1988.

Key words: erythrocyte deformability, mathematics, mechanical stress

Address for reprints: Frumkin Institute of Electrochemistry, USSR Academy of Sciences, Moscow, USSR.

MEKY, N. Effect of RA-233 on erythrocytes from patients with eczema. *J. Med.* 19: 33-45, 1988.

Key words: eczema, erythrocyte deformability, calcium

Address for reprints: Faculty of Science, Ain Shams University, Cairo, Egypt.

MICILLO, E., DERICOLOSO, A., TRANCHESE, D., CRISPANO, G., SOVERINA, P. and CAPUTI, M. Ipertensione arteriosa polmonare precapillare e variazioni emoreologico-coagulativo (Precapillary arterial pulmonary hypertension and hemorrheologico-coagulation changes). *Arch. Monaldi Mal. Torace* 42: 585-591, 1987.

Key words: blood coagulation disorders, hypertension, obstructive lung diseases, capillaries (English abstract)

No address available.

MILLER, B. and HEILMANN, L.* Hemorheological parameters in patients with gynecologic malignancies. *Gynecol. Oncol.* 33: 177-181, 1989.

Key words: blood viscosity, erythrocyte aggregation, blood proteins, hematocrit

Address for reprints: Dept. of Obstetrics and Gynecology, University Hospital, University of Essen, FRG.

MOISEEV, S.I. (The role of hemostasis and rheologic properties of blood in stable and progressive exertion-induced stenocardia.) *Kardiologiya* 28: 67-71, 1988.

Key words: angina pectoris, erythrocyte aggregation, hemostasis (English abstract)

No address available.

MORRIS, C.L.*, RUCKNAGEL, D.L., SHUKLA, R., GRUPPO, R., SMITH, C.M. and BLACKSHEAR, P. Evaluation of the yield stress of normal blood as a function of fibrinogen concentration and hematocrit. *Microvasc. Res.* 37: 323-338, 1989.

Key words: yield stress, fibrinogen concentration, hematocrit

Address for reprints: Comprehensive Sickle Cell Center, Children's Medical Center, Cincinnati Ohio 45229-2899, USA.

MOTTA, C.*, PALCOUX, J.B., MEYER, M. and ROCHE, M. Modifications de la fluidite membranaire erythrocytaire et lymphocytaire apres epuration plasmatique chez des enfants hypercholesterolemiques homozygotes de type IIa (Changes of erythrocyte and lymphocyte membrane fluidity after plasma extraction in children with type II homozygous hypercholesterolemia). *Ann. Med. Interne (Paris)* 139, Suppl. 1: 83-85, 1988.

Key words: erythrocytes, hypercholesterolemia, membrane fluidity, plasma exchange, erythrocyte deformability (English abstract)

Address for reprints: Laboratoire de Biochimie, Hotel-Dieu, Clermont-Ferrand, France.

NAGAKAWA, Y.*, AKEDO Y., KAKU, S. and ORIMO, H. Effect of flunarizine on volume flow of the common carotid artery, peripheral hemodynamics, erythrocyte deformability and platelet function. *Arzneimittelforschung* 39: 82-85, 1989.

Key words: blood platelets, erythrocyte deformability, flunarizine, carotid arteries, platelet aggregation

Address for reprints: Dept. of Geriatrics, Faculty of Medicine, University of Tokyo, Japan.

PRETOLANI, E. Emoreologia e microcircolazione (Hemorheology and microrcirculation). *G. Clin. Med.* 69: 601-604, 1988.

Key words: microcirculation, rheology, arteriosclerosis, blood viscosity, diabetic angiopathies

No address available.

RAMPLING, M.W.*, WHITTINGSTALL, P., MARTIN, G., BIGNALL, S., RIVERS, R.P., LISSAUER, T.J. and BAILEY, P.C. A comparison of the rheologic properties of neonatal and adult blood. *Pediatr. Res.* 25: 457-460, 1989.

Key words: blood viscosity, erythrocytes, fibrinogen, cell aggregation

Address for reprints: Dept. of Physiology and Biophysics, St. Mary's Hospital Medical School, London, UK.

RENDU, F.*, DAVELOOSE, D., DEBOUZY, J.C., BOURDEAU, N., LEVY-TOLEDANO, S., JAIN, M.K. and APITZ-CASTRO, R. Ajoene, the antiplatelet compound derived from garlic, specifically inhibits platelet release reaction by affecting the plasma membrane internal microviscosity. *Biochem. Pharmacol.* 38: 1321-1328, 1989.

Key words: blood platelets, membrane fluidity, platelet aggregation inhibitors

Address for reprints: U 150 INSERM, URA 184 CNRS, Hopital Lariboisiere, Paris, France.

ROUL, C.*, JUHAN-VAGUE, I., RAHMANI-JOURDHEUIL, D., MISHAL, Z. and VAGUE, P. Etude de l'effet de la pentoxifylline et de la propentofylline sur la fluidite membranaire de globules rouges de sujets diabetiques insulino-dependants (type 1) desequilibres (The effect of pentoxifylline and propentofylline on the membrane fluidity of red blood cells in uncontrolled insulin-dependent (type 1) diabetic patients). *Pathol. Biol. (Paris)* 36: 1081-1083, 1988.

Key words: diabetes mellitus, erythrocyte membrane, pentoxifylline (English abstract)

Address for reprints: Laboratoire d'Hematologie CHU de la Timone, Marseille, France.

RUSIAEV, V.F. and CHERNOV, A.I. (A conductometric method of studying erythrocyte deformability.) *Lab. Delo.* 12: 24-27, 1988.

Key words: erythrocyte deformability, conductometry, electric conductivity (English abstract)

No address available.

SCHÄFER, R.M.*, LESCHKE, M., STRAUER, B.E. and HEIDLAND, A. Blood rheology and hypertension in hemodialysis patients treated with erythropoietin. *Am. J. Nephrol.* 8: 449-453, 1988.

Key words: anemia, blood viscosity, erythropoietin, hemodialysis, rheology

Address for reprints: Dept. of Internal Medicine, University of Würzburg, FRG.

SCHAEFER, R.M.* and HEIDLAND, A. Erythropoietin, Blutviskosität und Hypertonie bei chronischem Nierenversagen. *Dtsch. Med. Wschr.* 114: 1046-1049, 1989.

Key words: erythropoietin, blood viscosity, renal disease

Address for reprints: as above.

SERGEEV, P.V., USENKO, A.N., FIRSOV, N.N. and SHIMANOVSKII, N.L. (Effects of x-ray contrast agents on the deformation properties of human erythrocytes.) *Biull. Eksp. Biol. Med.* 107: 194-196, 1989.

Key words: contrast media, erythrocyte deformability, osmolar concentration (English abstract)

No address available.

SOKOLOVA, V.A., VINOGRADOV, A.I., GRANOVA, L.V. and KOZINETS, G.I. (Erythrocyte deformability and morphology in children with suppurative peritonitis.) *Anesteziol. Reanimatol.* 6: 62-64, 1988.

Key words: erythrocyte deformability, postoperative complications, acute disease (English abstract)

No address available.

SOURANDER, P.* and BREIMER, L.H. Robin Fahraeus (1888-1968). *Thromb. Res.* 52: 499-506, 1988.

Key words: bibliography, hematology, history of medicine

Address for reprints: Dept. of Pathology, University of Goeteborg, School of Medicine, Sweden.

STAEDT, U., STEIN, T., BIGNION, D., HERRMANN, M., STAEDT, J. and KORTZIK, C. Hämorrhologie und Mikrozirkulation bei Hirninfarkt vor und nach Hämodilution (Hemorheology and microcirculation in cerebral infarct before and following hemodilution). *VASA Suppl.* 23: 285-287, 1988.

Key words: cerebral infarction, hemodilution, microcirculation
No address available.

STEINBACH, U., SCHEFFLER, A. and RIEGER, H. Einfluß normaler und pathologischer physikochemischer Randbedingungen sowie unterschiedlicher Porendurchmesser auf die Erythrozytenfiltrierbarkeit von Patienten mit arterieller Verschlusskrankheit und altersentsprechenden Kontrollen (Effect of normal and pathologic physicochemical surface conditions and various pore diameters on erythrocyte filterability in patients with arterial occlusive disease and control patients of the same age). *VASA Suppl.* 23: 294-296, 1988.

Key words: arterial occlusive diseases, erythrocyte deformability, diabetic angiopathies, risk factors
No address available.

SUMPIO, B.W.*, UPCHURCH, G.R. and JOHNSON, G. Jr. The influence of perfusate viscosity, RBC deformability and drag on the function of an isolated perfused rat kidney. *J. Surg. Res.* 46: 4-8, 1989.

Key words: blood viscosity, erythrocyte deformability, perfusion, hematocrit

Address for reprints: Dept. of Surgery, Yale University School of Medicine, New Haven, Connecticut 06510, USA.

THOMPSON, T.N.*, LACELLE, P.L. and COKELET, G.R. Perturbation of red blood cell flow in small tubes by white blood cells. *Pflügers Arch.* 413: 372-377, 1989.

Key words: erythrocytes, leukocytes, cardiovascular models, rheology

Address for reprints: Dept. of Biophysics, University of Rochester, NY 14642, USA.

TREVISAN, G. and CISILIN, M.P. Alopecia areata. Studio emoreologico e trattamento con pentossifillina (Alopecia areata. Hemorheological study and treatment with pentoxifylline). *G. Ital. Dermatol. Venereol.* 123: 211-214, 1988.

Key words: alopecia areata, erythrocyte deformability, pentoxifylline (English abstract)

No address available.

TULUPOV, A.N. and POPOV, V.I. Ustroistvo dlia opredeleniia deformiruemosti eritrotsitov (A device for determining the deformability of erythrocytes). *Vestn. Khir.* 140: 117-118, 1988.

Key words: erythrocyte deformability, hematology, equipment design

No address available.

VAYA, A., MIRA, Y., MARTINEZ, M., MIRALLES, F., AGUADO, C. and AZNAR, J. (Evaluation of erythrocyte deformability in carriers of thalassemic trait with the Hanss' hemorheometer.) *Sangre (Barc.)* 34: 50-52, 1989.

Key words: carrier state, erythrocyte deformability, rheology (English abstract)

No address available.

VOERMAN, H.J.* and GROENEVELD, A.B. Blood viscosity and circulatory shock. *Intensive Care Med.* 15: 72-78, 1989.

Key words: blood viscosity, shock, erythrocyte aggregation, leukocytes, review

Address for reprints: Dept. of Internal Medicine, Free University Hospital, Amsterdam, The Netherlands.

VOROB'EV, P.A., DVORETSKII, L.I., IAROSLAVTSEVA, G.N., AINABEKOVA, B.A. and MIAGKOV, A.V. O sviazi mezhdunarerial'noi gipertoniei i narusheniem deformiruemosti eritrotsitov u bol'nykh s khronicheskoi pochechnoi nedostatochnost'iu (Relation between arterial hypertension and disorder of erythrocyte deformability in patients with chronic renal failure). *Ter. Arkh.* 60: 65-66, 1988.

Key words: blood pressure, erythrocyte deformability, hypertension, kidney failure (English abstract)

No address available.

VORONIN, K.V., KOZINETS, G.I. and SERDIUK, V.N. (Early hemorheologic disorders in pregnant women at risk of developing late toxemia.) *Akush. Ginekol. (Mosk)* 10: 34-37, 1988.

Key words: anoxia, blood viscosity, hematologic pregnancy complications, risk factors (English abstract)

No address available.

WATALA, C. In vitro glycation of red blood cell proteins: high levels of glucose lower lipid fluidity of erythrocyte membranes. *Exp. Pathol.* 33: 233-238, 1988.

Key words: blood glucose, blood proteins, erythrocytes, kinetics

Address for reprints: Chair of Biophysics, University of Lodz, Poland.

YAMAGUCHI, H.*, SHIMIZU, T., OSADA, T., TSUCHIDA, H., MOTOYSU, S., NAGAE, T., HIRAYAMA, T., KITAMURA, M., ISHIMARU, S. and FURUKAWA, K. (The study of red cell deformability during cardiopulmonary bypass and the effect of prostaglandin E1). **Nippon Kyobu Geka Gakkai Zasshi** 36: 2233-2237, 1988.

Key words: alprostadil, cardiopulmonary bypass, erythrocyte deformability (English abstract)

Address for reprints: Dept. of Thoracic and Cardiovascular Surgery, University of Goeteborg, Sweden.

YASUI, K.*, MASUDA, M., MATSUOKA, T., YAMAZAKI, M., KOMIYAMA, A., AKABANE, T. and MURATA, K. Miconazole and amphotericin B alter polymorphonuclear leukocyte functions and membrane fluidity in similar fashions. **Antimicrob. Agents Chemother.** 32: 1864-1868, 1988.

Key words: amphotericin B, membrane fluidity, neutrophils

Address for reprints: Dept. of Pediatrics, Shinshu University, School of Medicine, Matsumoto, Japan.

ZHUKOTSKII, A.V., SNEGIREVA, N.S., IAVORSKAIA, E.S., GRIBKOV, E.N. and UMUDOV, K.M. (Morphometric research on the experimental performance of the erythrocyte filterability test.) **Biull. Eksp. Biol. Med.** 107: 372-376, 1989.

Key words: erythrocyte deformability, dietary cholesterol

No address available.