THE LEWIS SYSTEM AND THE BIOLOGICAL SIGNIFICANCE pdf

1: Lewis antigen system - Wikipedia

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Adapted from Blackwell et al. An old study carried out by Aird et al. Loss of usual histo-blood group carbohydrates seems to correlate with a poor prognosis. It has been pointed out that a relative down-regulation of glycosyltransferases, the loss of heterozygosity as well as hypermethylation of gene promoters are possible events involved in this process. A and B carbohydrates from ABO histo-blood group system present in the vascular endothelium react with the potent natural anti-A, anti-B, and anti-A,B antibodies activating the complement system and increasing the risk of antibody-mediated rejection of solid organ transplantations. It has been suggested that distinct structural differences and antigenicity of the carbohydrates present in the vascular endothelium compared to red blood cells can modulate the immune response of the recipient thus affecting engraftment. The increasing knowledge about the structural diversity of histo-blood group carbohydrates has contributed to the development of new technologies applied to transfusion medicine, cancer and therapy. The insertion of function spacer lipid constructs allows the creation of red blood cells with a controlled amount of carbohydrate for use in laboratory quality control of common and rare ABO and Lewis histo-blood group phenotypes. Anti-adhesion therapy provides an opportunity to use histo-blood group carbohydrates in the treatment of infections; blocking adhesion to cells expressing these carbohydrates is an alternative strategy to antibiotics. These strategies may be useful in cases of microbial resistance to antibiotics and chemotherapy especially in patients being treated for long periods. This form of therapy can have desirable effects at a lower cost than the production of specific antibiotics and vaccines, including in cases where vaccination is still not satisfactory. The tissue expression of ABH-Lewis antigens is more complex than it appears when strictly analyzed from red blood cell phenotypes. New studies to understand the relationship of these systems with microorganisms and the environment may contribute to our understanding of the evolutionary pressure that created and maintains the high variability of polymorphisms in human beings. Host-bacterial symbiosis in health and disease. Molecular diversity in the biosynthesis of GI tract glycoconjugates. A blood group related chart microorganism receptors. Symbiotic bacteria direct expression of an intestinal bactericidal lectin. Reciprocal interactions of the intestinal microbiota and immune system. Microbial recognition of human cell surface glycoconjugates. Curr Opin Struct Biol. The relationship between blood groups and disease. Multifarious roles of sialic acids in immunity. Ann N Y Acad Sci. The role of carbohydrates in infection strategies of enteric pathogens. Blood groups in infection and host susceptibility. Structural basis for the adherence of Plasmodium falciparum-infected erythrocytes to chondroitin 4-sulfate and design of novel photoactivable reagents for the identification of parasite adhesive proteins. Dynamic force spectroscopy of the Helicobacter pylori BabA-Lewis b binding. Multiple antigenic sites are involved in blocking the interaction of GII. ABH and related histoblood group antigens; immunochemical differences in carrier isotypes and their distribution. Histo-blood group antigens as allo-and autoantigens. ABO polymorphisms and their putative biological relationships with disease. Consequences of genetic polymorphisms and variations. Imperial College Press; Cartron JP, Rouger P, editors. Glycomapping the fine specificity of monoclonal and polyclonal Lewis antibodies with type-specific Lewis kodecytes and function-spacer-lipid constructs printed on paper. Lewis histo-blood group system and associated secretory phenotypes. Unravelling the biochemical basis of blood group ABO and Lewis antigenic substances. High resolution structures of the human ABO H blood group enzymes in complex with donor analogs reveal that the enzymes utilize multiple donor conformations to bind substrates in a stepwise manner. Genetic control of the fucosylation of ABH precursor chains. Evidence for new epistatic interactions in different cells and tissues. Heterogeneity of the ABH antigens determinants expressed in human pyloric and duodenal mucosae. Basic biochemistry of cell surface carbohydrates and aspects of the tissue distribution of histo-blood ABH and related glycosphingolipids. Role of ABO secretor status in mucosal innate immunity and H. A novel glycolipid variations revealed by monoclonal antibody immunochemical analysis of weak ABO subgroups of

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A. Blood group A1 and A2 revisited: Oxford University Press; Evolution of pathogen virulence: Genetic determinants of phenotypic diversity in humans. Genetic regulation of the expression of ABH and Lewis antigens in tissues. Microbial recognition of target-cell glycoconjugates. Glycans as legislator of host-microbial interaction: Widespread balancing selection and pathogen-driven selection at blood group antigen genes. Blood group phenotypes and infectious diseases. Susceptibility to infectious diseases: Cambridge University Press; p. Helicobacter pylori adhesin binding fucosylated histo-blood group antigens revealed by retagging. Functional adaptation of BabA, the H. Predisposition for cholera of individuals with O blood group. The ABO blood group system and Plasmodium falciparum malaria. Campylobacter jejuni binds intestinal H O antigen Fuc alpha 1, 2 Gal beta 1, 4GlcNAc , and fucosyloligosaccharides of human milk inhibit its binding and infection. Human susceptibility and resistance to Norwalk virus infection. Effect of host Lewis and ABO blood group antigen expression on Helicobacter pylori colonisation density and the consequent inflammatory response. Increased inflammatory responses of persons of blood group O to Helicobacter pylori. A relationship between cancer of stomach and the ABO blood groups. ABO blood group and the risk of pancreatic cancer. J Natl Cancer Inst. Expression of blood-group antigen A â€" a favorable prognostic factor in non-small-cell lung cancer. N Engl J Med. ABO blood-group antigens in oral cancer. Phenotypes of antibody-mediated rejection in organ transplants. Trends in ABO-incompatible kidney transplantation. Modification of red blood cells for laboratory quality control use. Modeling transfusion reactions and predicting in vivo cell survival with kodecytes. Therapeutic potential of carbohydrate-based polymeric and nanoparticle systems. Expert Opin Drug Deliv. Addressing the global need to combat multidrug resistance: Carbohydrate microarrays identify blood group precursor cryptic epitopes as potential immunological targets of breast cancer. May 30, ; Accepted: Published by Elsevier Editora Ltda This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial No Derivative License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium provided the original work is properly cited and the work is not changed in any way.

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2: Clinical significance of antibody specificities to M, N and Lewis blood group system

ABO, H, secretor and Lewis histo-blood system genes control the expression of part of the carbohydrate repertoire present in areas of the body occupied by microorganisms.

This article has been cited by other articles in PMC. Most of the published literature refers to antibodies of Lewis blood group system to be insignificant, whereas antibodies to M and N blood groups are associated with variable clinical significance. The aim of this study is to find the frequency and clinical significance of antibodies to M, N and Lewis blood group systems. The study was carried out retrospectively from January to December A total of 49, red cell antibody screens were performed and a total of identifications of red cell antibodies were carried out. A total of specific antibodies were detected: Half of the Lewis system antibodies, i. Our study highlights the importance of detecting the thermal amplitude of antibodies with variable clinical significance especially if both IgG and IgM types of antibodies are associated with it so as to establish their clinical significance. Several approaches such as, specificity and thermal amplitude of the antibody, 1 hr survival of 51Cr-labeled incompatible red blood cells RBCs and functional cellular assays including monocyte monolayer assay are considered as valuable in predicting the clinical significance. Since cellular assays and labeling studies are usually unavailable in routine laboratories, it is the historical data on the association of an antibody with HTRs and HDN, which is used to predict their clinical significance. They are not considered to be clinically significant. We retrospectively analyzed the results of 49, antibody screening tests over a 4 year period from January to December Norcross GA using a four cell panel capture R ready screen with solid phase red cell adherence capture technology. The screening cell panels covered most of the clinically significant antigens with homozygous expression of the most important ones. In case of a positive antibody screen, further testing was performed to precisely characterize the irregular antibody ies and to determine their specificities in case of alloantibodies. Antibody identification was performed using different cell panels from Immucor Inc. Advanced investigations such as adsorption, elution etc. Obstetric history in case of females and other relevant clinical and transfusion records were reviewed for each case. All anti-M and anti-N antibodies identified were confirmed by testing the serum against a panel of enzyme treated cells. Thermal amplitude of the antibodies was determined by testing at three different temperatures: The results were compared with existing literature. Results In the observed time interval, a total of 49, red cell antibody screens were performed. This included 29, Antibody identification was carried out in cases. Amongst the antibodies of anti-N specificity, IgG class was detected in 7 Of the total antibodies detected, 4 1. Half of the Lewis system antibodies i. Table 1 Open in a separate window History of one or more episodes of blood transfusion was elicited in 9 out of 25 patients with anti-M antibody and 6 patients gave significant obstetric history as well. However, the relation did not reach statistical significance. Similarly, no significant correlation was observed between history of transfusion or pregnancy and the presence of anti-N antibody. The number of patients with Lewis antibodies was very small to determine any statistical correlations. Discussion Though anti-M is a frequently encountered antibody of the MNSs blood group system, anti-N is relatively rare. Various authors report the prevalence of anti-M to be ranging from 3. In a study by Mladenovic,[6] majority of their anti-M antibodies were of the warm IgG type, whereas, amongst the anti-N it is the IgM class that predominated. Other similar cases of clinically significant anti-M and anti-N have been reported in the literature. Others have reported the prevalence of anti-Lea to be in the range of 3. Half of the Lewis system antibodies detected by us i. Mladenovic,[6] on the other hand have reported majority of anti-Lea 71 of 76 detected and very few anti-Leb 7 of 25 detected to be of IgG type. It is attributed more to poor expression of Lewis antigens on fetal cells rather than the frequently cited high incidence of IgM type of Lewis antibodies. These antibodies with a higher thermal range, which would otherwise be termed clinically insignificant, will induce in vivo hemolysis in patients with lowered core body temperature, which is now a common practice in various surgeries such as neuro surgeries, cardiac surgeries etc. Conclusion Our study highlights the importance of detecting the thermal amplitude of antibodies with variable clinical significance.

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3: How to Understand the Biological Importance of Amino Acids in the Body of Humans

Who was the Lewis system named after and who reported it and when? named after the first individuals to make the antibody, reported by Mourant in What antibody was found to react with individuals that did not have the LeA antigen?

Instead, Lewis antigens are components of exocrine epithelial secretions, and are subsequently adsorbed onto the surface of the red cell. Most type 1 chain precursor is converted to Le b , therefore these individuals appear as if they are Le a-. In absence of a functional Lewis gene lele , neither Le a nor Le b are synthesized, leading to the Le a-b- phenotype. This phenotype is more common in persons of African descent. Type 1 is found in secretions and in the serum. Type 2 is found exclusively on the surface of red blood cells. No type 1 oligosaccharide is found on RBCs. Unbranched type 1 and 2 oligosaccharides represent i antigen. Branched type 1 and 2 oligosaccharides are I antigens. Oligosaccharide branching increases with age, thus adults have mostly I antigen. The h gene is an amorph. If no further modifications are made to the H antigen, the person is type O. When the A gene product acts on the H antigen and adds an N-acetylgalactosamine, the A antigen results and the person is type A. When the B gene product acts on the H antigen to add a galactose, the B antigen results and the person is type B. The le gene is an amorph. The Lewis antigen produced on free type 1 precursor substance passively adsorbs onto the surfaces or red blood cells. Addition of this second fucose produces the Le b antigen. Thus, individuals with the Le gene but no Se gene will have red blood cells bearing only the passively-adsorbed Le a but no Le b. Individuals with both the Le gene and the Se gene will have red blood cells bearing only the passively adsorbed Le b and no Le a. Individuals with no Le gene have neither Le a nor Le b. Lewis antibodies[edit] Lewis antibodies are naturally occurring antibodies, almost always IgM type, found almost exclusively in Le a-b- individuals. Lewis antibodies are generally reactive at room temperature and only occasionally at 37 C and AHG phase antihuman globulin. Lewis antibodies are not a cause of hemolytic disease of the fetus and newborn HDFN , as stated below.

4: Hydroxyl radical - Wikipedia

Context: The clinically significant antibodies are those active at 37Â°C and/or by the indirect antiglobulin test. Most of the published literature refers to antibodies of Lewis blood group system to be insignificant, whereas antibodies to M and N blood groups are associated with variable clinical significance.

5: [Biological significance of tumor marker].

The Lewis system is unique. Lewis system overview Antigen production The Lewis and ABO systems Clinical significance Lewis antibody detection and.

6: Lewis blood group system | physiology | www.enganchecubano.com

The Biological Significance of Bacterial Biofilm By Ken Bayles, Ph.D., Professor, UNMC Bacterial biofilm is one of the hottest topics in microbiology today.

7: Lewis Henry Morgan | American anthropologist | www.enganchecubano.com

[Biological significance of tumor marker]. [Article in Japanese] Ochi Y. PMID: Lewis Blood-Group System/immunology; Neoplasms/diagnosis Peptides/analysis*.*

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She wanted a baby-but not a man! The great Valentines Day balloon race The shadow of murder: Swamp water, The southerner, The diary of a chambermaid Monitoring populations of Shoshonea pulvinata in the Pryor and Beartooth Mountains, Carbon County, Montan Consideration of H. R. 11. Cowgirl of the Rocking R Hydraulic Design of Side Weirs Squirrel watching The Pathophysiology of combined injury and trauma A Romance Of Coca Or The Secret Of A Villa 9. Monitoring Exchange Server 2010 : Monitoring Exchange databases ; Monitoring mail flow ; Monitoring Ex Chicago South Shore South Bend 11. Israel Putnam. Nathan Hale. Disruptive bodies: disability, embodiment and sexuality Elizabeth Stuart ID_eNTITY Volume 5 (Id_entity) International fire chiefs association Multiplying and dividing fractions word problems 5th grade Note taking app korean Simplified I Ching Learning With Colleagues The effects of varying color and direction of projection on the catching performance of 8.5 to 11.5 year Living in the Corporate Zoo The splendor of Persian carpets A social history ofmadness Bens Christmas carol The Pentagon paradox Simpsons comics unchained The crisis of American labour Boys of Few Words Moon Power Starguide 2005 Introduction by Tom Verducci by John Schulian by Steve Rushin by Harold Peterson by Roy Blount Jr. by Rob Freedom of expression in the 21st century Alcohol, drug abuse, and aggression Treasury of favorite Muslim names Cambridge ielts 1 Forensic science advanced investigations teachers edition Modicon tsx micro manual Professionalism and the Public Interest Froggy Goes to Camp (Froggy) Learn excel 2010 expert skills