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S1	blood bank technology	Ebook Central, Public Health Database, Publicly Available Content Database	32°

° Duplikat dihapus dari pencarian Anda dan dari jumlah hasil Anda.

Serum Ferritin Has Limited Prognostic Value on Mortality Risk in Patients with Decompensated Cirrhosis: A Propensity Score Matching Analysis

Guo, Gaoyue [1] ; Sun, Mingyu [1] ; Li, Yifan [1] ; Yang, Wanting [1] ; Wang, Xiaoyu [1] ; Yu, Zihan [1] ; Li, Chaoqun [1] ; Hui, Yangyang [1] ; Fan, Xiaofei [1] ; Jiang, Kui [1]
; Sun, Chao [1]
[1] Department of Gastroenterology and Hepatology, Tianjin Medical University General Hospital , Tianjin , China

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ABSTRAK (ENGLISH)

Objective

The prognostic value of serum ferritin remains elusive in the literature. We aimed to examine the association between serum ferritin and mortality risk in cirrhosis.

Methods

A total of 257 cirrhotic patients were recruited. The cut-off of serum ferritin was determined by X-tile. The Cox regression and Kaplan-Meier method were used. A 1:1 propensity score matching (PSM) was performed to diminish the impacts of selection bias and possible confounders.

Results

The difference regarding mortality was mostly significant for serum ferritin >158 ng/mL. Before PSM, serum ferritin >158 ng/mL was an independent predictor of mortality. However, the clinical relevance of high ferritin level for prognostication was blunted after PSM (survival rate: 86.8% vs 96.3%, *P* = .078). Cox regression indicated that model for end-stage liver disease remains only independent risk factor of 180-day mortality after PSM.

Conclusion

Serum ferritin may not serve as an independent prognostic indicator of mortality risk in decompensated cirrhotic patients.

A Meta-Analysis on the Association of Colibactin-Producing pks + Escherichia coli with the Development of Colorectal Cancer

Gaab, Marcianne Elaine [1]
; Prim Olivette Lozano [1]
; Ibañez, Danica [1]
; Korina Diane Manese [1]
; Fatima May Riego [1]
; Tiongco, Raphael Enrique [2]
; Albano, Pia Marie [1]
[1] Department of Biological Sciences, College of Science, University of Santo Tomas , Manila , Philippines [2] Department of Medical Technology, College of Allied Medical Professions, Angeles University Foundation , Angeles City , Philippines

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ABSTRAK (ENGLISH)

Objective

Previous studies on the association between *pks*$^{+}$*Escherichia coli* and colorectal cancer (CRC) demonstrated conflicting results. Hence, we performed a meta-analysis to obtain more precise estimates.

Methods

Related literature was obtained from PubMed, ScienceDirect, Google Scholar, and Cochrane Library. Data were then extracted, summarized, and subjected to analysis using Review Manager 5.4 by computing for the pooled odds ratios at the 95% confidence interval.

Results

Overall analysis showed that individuals carrying *pks*$^{+}$*E coli* had a greater risk of developing CRC. Subgroup analysis further showed that individuals from Western countries carrying *pks*$^{+}$*E coli* and individuals with *pks*$^{+}$*E coli* in their tissue samples had increased risk of developing CRC.

Conclusion

Results of this meta-analysis suggest that individuals with *pks*$^{+}$*E coli* have a greater risk of developing CRC. However, more studies are needed to confirm our claims.

Dokumen 3 dari 24

Mycoplasma hominis Meningitis Diagnosed by Metagenomic Next-Generation Sequencing in a Preterm Newborn: a Case Report and Literature Review

Che, Guanglu [1] ; Liu, Fang [1] ; Chang, Li [1] ; Lai, Shuyu [1] ; Teng, Jie [1] ; Yang, Qiuxia [1] [1] Department of Laboratory Medicine, West China Second University Hospital, Key Laboratory of Birth Defects and Related Diseases of Women and Children, Ministry of Education, West China Second University Hospital, Sichuan University , Chengdu, Sichuan , People's Republic of China

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ABSTRAK (ENGLISH)

Mycoplasma hominis is mainly colonized in the genital tract and vertically transmitted to newborns; however, it rarely causes neonatal meningitis. We report a case of *M. hominis* meningitis in a premature infant. She was admitted to our hospital for treatment after 6 days of repeated fever. After admission, repeated cerebrospinal fluid (CSF) analysis showed that leukocytes and protein in CSF increased substantially and glucose decreased, but there was no growth in conventional CSF culture. The patient was diagnosed with *M. hominis* meningitis by metagenomic next-generation sequencing (mNGS). The antibiotic therapy used for the neonate was meropenem, vancomycin, and ampicillin against bacterial infection and azithromycin against mycoplasma infection. The child was subsequently considered cured and discharged from the hospital and followed up regularly in the neurology clinic. The mNGS may be a promising and effective diagnostic technique for identifying uncommon pathogens of meningitis in patients with meningitis symptoms and signs without microbial growth in routine CSF culture.

Dokumen 4 dari 24

Increased Levels of ANGPTL3 and CTRP9 in Patients With Obstructive Sleep Apnea and Their Relation to Insulin Resistance and Lipid Metabolism and Markers of Endothelial Dysfunction

Fadaei, Reza [1] ; Samaneh Mohassel Azadi [2] ; Laher, Ismail [3] ; Khazaie, Habibolah [1] [1] Sleep Disorders Research Center, Kermanshah University of Medical Sciences , Kermanshah , Iran [2] Department of Clinical Biochemistry, Faculty of Medicine Tehran University of Medical Sciences , Tehran , Iran [3] Faculty of Medicine, Department of Anesthesiology, Pharmacology and Therapeutics, The University of British Columbia , Vancouver , Canada

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ABSTRAK (ENGLISH)

Objective

Obstructive sleep apnea (OSA) has a close relation with obesity and perturbation in adipokines and hepatokines, which are linked to OSA consequences such as insulin resistance, dyslipidemia, and endothelial dysfunction. This study aimed to assess the relation of C1q/TNF-related protein 9 (CTRP9) and angiopoietin-like protein 3 (ANGPTL3) with OSA and biochemical measurements.

Methods

Serum levels of ANGPTL3, CTRP9, adiponectin, leptin, intercellular adhesion molecule 1 (ICAM-1), and vascular cell adhesion protein 1 (VCAM-1) were determined in 74 OSA patients and 27 controls using enzyme-linked immunosorbent assay kits.

Results

Levels of ANGPTL3, CTRP9, leptin, ICAM-1, and VCAM-1 were increased in the patients compared to the controls, whereas adiponectin levels decreased. ANGPTL3 had a positive correlation with total cholesterol, triglyceride, low-density lipoprotein cholesterol, ICAM-1, and VCAM-1 and was inversely correlated with leptin. CTRP9 showed a positive correlation with body mass index, insulin resistance, ICAM-1, and VCAM-1.

Conclusion

The results indicated the relation of ANGLTP3 and CTRP9 with OSA and its complications, which suggested a possible role for these factors in the consequences of OSA.

Dokumen 5 dari 24

Association of Catalase Gene Polymorphisms with Idiopathic Nephrotic Syndrome in a Chinese Pediatric Population

Shi, Jianrong [1] ; Li, Wei [1] ; Tao, Ran [1] ; Zhou, Dongming [1] ; Guo, Yajun [1] ; Fu, Haidong [2] ; Sun, Anna [1] ; Zhang, Junfeng [1] ; Mao, Jianhua [2 1] Department of Clinical Laboratory, The Children's Hospital, Zhejiang University School of Medicine, National Clinical Research Center For Child Health , Hangzhou , China [2] Department of Nephrology, The Children's Hospital, Zhejiang University School of Medicine, National Clinical Research Center For Child Health , Hangzhou , China

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ABSTRAK (ENGLISH)

Objective

Our aim was to investigate the association between gene polymorphisms in *catalase* (*CAT*), a well-known oxidative stress regulator, and susceptibility to idiopathic nephrotic syndrome (INS) or responses to steroid therapy in a Chinese pediatric population.

Methods

We analyzed 3 *CAT* single-nucleotide polymorphisms (SNVs; rs7943316, rs769217, and rs12270780) using multi-polymerase chain reaction combined with next-generation sequencing in 183 INS patients and 100 healthy controls.

Results

For the allele and genotype frequencies of the *CAT* SNVs, no significant differences were observed between INS

patients and controls. Patients with C allele of *CAT* rs769217 had a higher risk of developing steroid-dependent nephrotic syndrome than the steroid-sensitive nephrotic syndrome patients (P = 0.018; odds ratio = 1.76).

Conclusion

Our data suggests that genetic variations in *CAT* were unlikely to confer susceptibility to INS in Chinese children, whereas the C allele of the *CAT* rs769217 polymorphism showed a strong association with steroid-dependent responses in Chinese INS children.

Association between Methylene-Tetrahydrofolate Reductase C677T Polymorphism and Human Immunodeficiency Virus Type 1 Infection in Morocco

Baba, Hanâ [1]
; Bouqdayr, Meryem [1]
; Saih, Asmae [1] ; Bensghir, Rajaa [2] ; Ouladlahsen, Ahd [2] ; Sodqi, Mustapha [2] ; Marih, Latifa [2] ; Zaidane, Imane [3] ; Kettani, Anass [4] ; Abidi, Omar [5] ; Wakrim, Lahcen [1] [1] Virology Unit, Immuno-virology Laboratory, Institut Pasteur du Maroc , Casablanca , Morocco [2] Service des Maladies Infectieuses, CHU Ibn Rochd , Casablanca , Morocco [3] Virology Unit, Viral Hepatitis Laboratory, Institut Pasteur du Maroc , Casablanca , Morocco [4] Laboratory of Biology and Health, URAC 34, Hassan II University-Casablanca, Faculty of Sciences Ben M'Sik , Casablanca , Morocco [5] Laboratory of Human Molecular Genetics and Medical Genomics, Institut Supérieur des Professions Infirmières et Techniques de Santé (ISPITS) de Casablanca , Casablanca , Morocco

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ABSTRAK (ENGLISH)

Human immunodeficiency virus type 1 (HIV-1) infection varies substantially among individuals. One of the factors influencing viral infection is genetic variability. Methylenetetrahydrofolate reductase (*MTHFR*) C677T polymorphism is a genetic factor that has been correlated with different types of pathologies, including HIV-1. The *MTHFR* gene encodes the MTHFR enzyme, an essential factor in the folate metabolic pathway and in maintaining circulating folate and methionine at constant levels, thus preventing the homocysteine accumulation. Several studies have shown the role of folate on $CD4^+$ T lymphocyte count among HIV-1 subjects. In this case-control study we aimed to determine the association between the *MTHFR* C677T polymorphism and HIV-1 infection susceptibility, AIDS development, and therapeutic outcome among Moroccans. The C677T polymorphism was genotyped by polymerase chain reaction followed by fragment length polymorphism digestion in 214 participants living with HIV-1 and 318 healthy controls. The results of the study revealed no statistically significant association between *MTHFR* C677T polymorphism and HIV-1 infection (P >.05). After dividing HIV-1 subjects according to their AIDS status, no significant difference was observed between C677T polymorphism and AIDS development (P >.05). Furthermore, regarding the treatment response outcome, as measured by HIV-1 RNA viral load and $CD4^+$ T cell counts, no statistically significant association was found with *MTHFR* C677T polymorphism. We conclude that, in the genetic

context of the Moroccan population, *MTHFR* C677T polymorphism does not affect HIV-1 infection susceptibility, AIDS development, or response to treatment. However, more studies should be done to investigate both genetic and nutritional aspects for more conclusive results.

Dokumen 7 dari 24

Incidental Discovery of a Patient with the Bombay Phenotype

Jacobs, Jeremy W [1]
; Horstman, Erin [1] ; Gisriel, Savanah D [1]
; Tormey, Christopher A [1] ; Sostin, Nataliya [1] [1] Department of Laboratory Medicine, Yale School of Medicine , New Haven, CT , USA

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ABSTRAK (ENGLISH)

Bombay phenotype, an exceptionally rare blood type in individuals outside of Southeast Asia, occurs in approximately 1 in 1,000,000 individuals in Europe. This blood phenotype is characterized by the absence of the H antigen on red blood cells (RBCs) and in secretions. As the H antigen is the structure on which the ABO system is built, individuals lacking this antigen are unable to produce A or B antigens and appear as type O on routine ABO phenotyping. H deficiency does not cause ill effect; however, these individuals produce an anti-H alloantibody capable of causing severe acute hemolytic transfusion reactions when exposed to RBCs that express the H antigen. In this case study, we highlight the incidental discovery of a patient with Bombay phenotype in a North American hospital system, expected test results, the immunologic and genetic basis underlying the Bombay and para-Bombay phenotypes, and methods to ensure availability of compatible blood.

Dokumen 8 dari 24

About the Journal

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Dokumen 9 dari 24

Blood Donors with Thalassemic Trait, Glucose-6-Phosphate Dehydrogenase Deficiency Trait, and Sickle Cell Trait and Their Blood Products: Current Status and Future Perspective

Noulsri, Egarit [1]
; Lerdwana, Surada [2 1] Research Division, Faculty of Medicine Siriraj Hospital, Mahidol University , Bangkok , Thailand [2] Biomedical Research Incubator Unit, Faculty of Medicine Siriraj Hospital, Mahidol University , Bangkok , Thailand

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ABSTRAK (ENGLISH)

The use of blood products for different medical purposes has increased in recent years. To meet increasing demand, some blood centers allow volunteer donors with thalassemic trait, glucose-6-phosphate dehydrogenase deficiency (G6PD) trait, and sickle cell trait (SCT) to donate blood if their hemoglobin values fall within acceptable ranges and show no signs of hemolysis. Currently, there are no standard guidelines or policies regarding the use or management of blood products obtained from these donors. However, in recent years, there has been advanced research on eligible donors who have these underlying conditions. In this review, we summarize the current knowledge from in vitro and in vivo studies regarding donor characteristics, changes in physical and biochemical parameters in blood products during processing and storage, and posttransfusion efficacy of blood products. In addition, we discuss some unresolved issues concerning blood products from thalassemic trait, G6PD-deficiency trait, and SCT donors.

Dokumen 10 dari 24

Pourbiax Diagrams as an Aid to Understanding the Impact of Acid/Base Disturbance on Blood Glucose Point-of-Care Testing

McPherson, Peter A C [1]
; McClements, Owen S [2] ; Johnston, Ben M [1 1] School of Science, Engineering &Construction, Belfast Metropolitan College, Titanic Quarter Campus , Belfast , UK [2] Faculty of Medicine, Health &Life Sciences, Queen’s University Belfast , UK

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ABSTRAK (ENGLISH)

Objective

Assays based on redox reactions that involve proton transfer are vulnerable to artifactual findings in metabolic acidosis/alkalosis. We evaluated the impact of pH on the measurement of blood glucose by the glucose dehydrogenase/pyrroloquinoline quinone system used in point-of-care-testing.

Methods

We applied a series of thermodynamic equations to adjust the Gibbs energy for the pyrroloquinoline quinone couple. This adjusts values taken under standard conditions to those more closely resembling the physiological state.

Results

Under standard conditions, the pyrroloquinoline quinone couple has $E^{\circ} = -0.125$ V whereas adjustment to the physiological state (pH 7.40, ionic strength 0.15 mol/L, and temperature 310.15°K) yields $E^{\circ\prime} = -0.166$ V. This corresponds to an uncertainty in blood glucose determination of approximately 0.13 mmol/L.

Conclusion

We have demonstrated that the impact of pH on blood glucose determination by the glucose dehydrogenase/pyrroloquinoline quinone system (under physiologically relevant conditions of ionic strength and temperature) is not clinically significant.

Culturing Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) for Diagnosis and Genome Sequencing

Zeng, Zhiqi [1] ; Guo, Hua [2] ; Chen, Liping [1] ; Lin, Zhengshi [1] ; Guan, Wenda [1] ; Wang, Yutao [1] ; Jiang, Haiming [1] ; Wu, Xiao [1] ; Yin, Yong [2] ; Gao, Zelong [2] ; Chen, Canxiong [1] ; Yang, Zifeng [1] 1 State Key Laboratory of Respiratory Disease, National Clinical Research Center for Respiratory Disease, Guangzhou Institute of Respiratory Health, the First Affiliated Hospital of Guangzhou Medical University , Guangzhou , China 2 Zhuhai Baso Diagnostics , Zhuhai , China

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ABSTRAK (ENGLISH)

Objective

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) nucleic acid detection “re-positive” phenomenon is encountered clinically. The accuracy of a viral nucleic acid test is crucial to prevent reintroduction of the virus into the community. This study evaluated the effect of virus culturing on increasing the sensitivity and specificity of real-time polymerase chain reaction (RT-PCR) detection and viral genomic sequencing.

Methods

A series of tenfold dilutions of a SARS-CoV-2 viral stock were conducted and cultured for either 24 or 48 hours. The viral load of cultured samples was determined by RT-PCR. The cultured and non-cultured samples of 1x 50% tissue culture infectious dose (TCID50) were sequenced using metagenomic next-generation sequencing. The depth and coverage of SARS-CoV-2 genome were measured.

Results

The lowest viral load detectable in a sample with RT-PCR was 0.01 TCID50. After a 24-h culture, the viral ORF 1ab and *N*-gene cycle threshold (CT) values were reduced by 4.4 points and 1 point, respectively. One TCID50 viral load

of post 24-h culture revealed the sequence depth reached an average of 752 reads, compared with 0.15 in the nonculture; furthermore, the coverage was 99.99% while 6.42% in the nonculture.

Conclusion

These results indicate that virus culturing can significantly increase the viral load, which can increase the certainty of true-positive detection of the viral nucleic acids, and improve the quality of virus genomic sequencing.

Dokumen 12 dari 24

Essential Thrombocythemia and Post-Essential Thrombocythemia Myelofibrosis: Updates on Diagnosis, Clinical Aspects, and Management

Omar Castaneda Puglianini [1]
; Peker, Deniz [2] ; Zhang, Linsheng [2]
; Papadantonakis, Nikolaos [3] [1] H. Lee Moffitt Cancer Center &Research Institute, Department of Blood &Marrow Transplant &Cellular Immunotherapy , Tampa, FL , USA [2] Department of Pathology and Laboratory Medicine, Emory University School of Medicine , Atlanta, GA , USA [3] Winship Cancer Institute of Emory University, Department of Hematology and Medical Oncology , Atlanta, GA , USA

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ABSTRAK (ENGLISH)

Although several decades have passed since the description of myeloproliferative neoplasms (MPN), many aspects of their pathophysiology have not been elucidated. In this review, we discuss the mutational landscape of patients with essential thrombocythemia (ET), prognostic scores and salient pathology, and clinical points. We discuss also the diagnostic challenges of differentiating ET from prefibrotic MF.

We then focus on post-essential thrombocythemia myelofibrosis (post-ET MF), a rare subset of MPN that is usually studied in conjunction with post-polycythemia vera MF. The transition of ET to post-ET MF is not well studied on a molecular level, and we present available data. Patients with secondary MF could benefit from allogenic hematopoietic stem cell transplantation, and we present available data focusing on post-ET MF.

Dokumen 13 dari 24

MLL1:EZH2 Ratio in Uterine Secretions and Endometrial Receptivity in Patients with Endometriosis

Zou, Kehan [1] ; Du, Qing [2] ; Chen, Xin [2] ; Tang, Pingfang [2] ; Liang, Huizhen [3]
[1] Department of Health, The Maternal and Child Health Hospital of Hunan Province [2] Department of Second School of Clinical Medicine, Hunan University of Chinese Medicine [3] Department of Clinic of

Integrated Traditional &Western Medicine, The Maternal and Child Health Hospital of Hunan Province , Changsha, China

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ABSTRAK (ENGLISH)

Objective

To establish a novel approach for diagnosing endometriosis (EM) in patients with impaired endometrial receptivity.

Method

Mixed lineage leukemia 1 (MLL1) and enhancer of zeste homolog 2 (EZH2) levels were analyzed. The MLL1:EZH2 ratio in identifying impaired endometrial receptivity has been established and validated.

Results

In normal endometrial tissue, the MLL1:EZH2 ratio increased significantly in the midsecretory phase, compared with that in the proliferative phase. In the midsecretory phase, the MLL1:EZH2 ratio in endometrial tissues and uterine secretions accurately identifies patients with EM who have impaired endometrial receptivity. In the validation group, the sensitivity and specificity of the MLL1:EZH2 ratio in the uterine secretions of the midsecretory phase, in diagnosing patients EM who have impaired endometrial receptivity, were 100% and 96.55%, respectively.

Conclusions

The MLL1:EZH2 ratio in uterine secretions of the midsecretory phase may serve as a marker to diagnose EM in patients with impaired endometrial receptivity.

Dokumen 14 dari 24

Coping with the COVID-19 Pandemic: How a Master’s in Clinical Laboratory Sciences Program Adapted Through the Modification of Existing Resources

Carbonaro, Carol A [1] ; Isabella, Debbie [1] ; Faisal Huq Ronny [1] [1] Department of Pathology, Graduate School of Basic Medical Sciences, New York Medical College , Valhalla, New York , USA

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ABSTRAK (ENGLISH)

Objective

Our aim was to describe the rapid adaption of a Master of Clinical Laboratory Sciences (MCLS) program to the abrupt suspension of classroom instruction and laboratory training at affiliated hospitals in compliance with the New York governor’s executive order in March 2020.

Methods

Teaching modifications included greater emphasis on Zoom video conferencing, Media Lab assignments, independent self-study, and online testing.

Results

Instruction of academic coursework continued uninterrupted using previously established teaching modalities. Clinical training presented 2-fold concerns, credit hours needed for the master’s degree and clinical hours required for New York State licensing. The latter was delayed.

Conclusion

The real-time need to deliver laboratory science education during a time of statewide closure was fulfilled using available teaching modalities. The resulting uninterrupted academic and clinical training ensured the education of the incoming workforce of our clinical laboratories. This teaching strategy may be considered during new curricula development in preparation for times of future crises.

Dokumen 15 dari 24

A Literature Review on How We Can Address Medical Laboratory Scientist Staffing Shortages

Halstead, Diane C [1] ; Sautter, Robert L [2 1] Global Infectious Disease Consultants LLC , Jacksonville Beach, FL 32250 , USA [2] RL Sautter Consulting LLC , Lancaster, SC 29720 , USA

Link dokumen ProQuest

ABSTRAK (ENGLISH)

Objective

Laboratories are facing a critical shortage of medical laboratory scientists (MLS) and medical laboratory technicians (MLT) to address an increasing demand for laboratory testing. Training program closures, fewer student applicants, and financial decisions have contributed to staffing shortages. Lack of visibility, low wages, and perceived lack of opportunities for upward career mobility contribute to challenges in recruiting and retaining qualified individuals and students who are unaware of laboratory medicine careers. Our goal was to review the literature to determine the current state and consequences of staffing shortages, and potential solutions to address these shortages.

Methods

Medline/PubMed, PubMed Central, MeSH, Google Scholar, and Marshall Digital Scholar were used as resources.

Discussion/Conclusions

A collaboration of stakeholders is needed to identify staffing challenges, barriers, and solutions and to increase visibility of laboratory professionals. Early recruitment is best started in the middle and high school educational process.

Dokumen 16 dari 24

Assessment of the Stability of Midregional Proadrenomedullin in Different Biological Matrices

Angeletti, Silvia [1] ; Legramante, Jacopo M [2] ; Lia, Maria Stella [3] ; Loreta D'Amico [3] ; Fogolari, Marta [1] ; Cella, Eleonora [1] ; De Cesaris, Marina [1] ; De Angelis, Fabio [2] ; Pieri, Massimo [4] ; Terrinoni, Alessandro [4] ; Bernardini, Sergio [4] ; Minieri, Marilena [4]

[1] Unit of Clinical Laboratory Science, University Campus Bio-Medico , Rome , Italy [2] Emergency Department, Tor Vergata University Hospital , Rome , Italy [3] Unit of Laboratory Medicine, Tor Vergata University Hospital , Rome , Italy [4] Department of Experimental Medicine, University of Tor Vergata , Rome Italy

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ABSTRAK (ENGLISH)

Midregional proadrenomedullin (MR-proADM) has been shown to play a key role in endothelial dysfunction, with increased levels helping to prevent early stages of organ dysfunction. Recent clinical evidence has demonstrated MR-proADM to be a helpful biomarker to identify disease severity in patients with sepsis as well as pneumonia. This biomarker is helpful at triage in emergency departments to assess risk level of patients. The aim of this study is to evaluate the stability of MR-proADM in different biological matrices. The results, obtained by Bland-Altman and scatter plot analyses, demonstrate that deviation of MR-proADM concentration in serum compared to EDTA plasma unequivocally shows that serum should not be used as a sample matrix. Instead, the excellent correlation of heparin plasma vs EDTA plasma samples shows that heparin plasma can be used without reservation in clinical routine and emergency samples.

Dokumen 17 dari 24

Serum Leukocyte Cell-Derived Chemotaxin 2 (LECT2) Level Is Associated with Osteoporosis

Wang, Qiang [1] ; Xu, Feng [1] ; Chen, Jiong [2] ; Yan-Qing Xie [1] ; Su-Ling, Xu [1] ; Wen-Ming, He [1 1] Affiliated Hospital of Medical School of Ningbo University , Ningbo, Zhejiang , China [2] Laboratory of Biochemistry and Molecular Biology, School of Marine Sciences, Meishan Campus, Ningbo University , Ningbo, Zhejiang , China

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ABSTRAK (ENGLISH)

Objective

The aim of this study was to examine serum leukocyte cell-derived chemotaxin 2 (LECT2) levels in osteoporosis subjects to confirm its association with osteoporosis.

Methods

A total of 204 adult subjects were recruited. Bone mineral densities (BMD) were assessed and blood samples were collected for measurements of biomedical parameters and the bone turnover markers. Serum LECT2 levels were measured by enzyme-linked immunosorbent assay. The relationships between serum LECT2 levels and other parameters were analyzed using the Spearman correlation coefficient.

Results

Serum LECT2 levels were significantly increased in osteoporosis subjects over controls. We found a significantly negative correlation of serum LECT2 with BMD, 25-hydroxy-vitamin D, and creatinine and a significantly positive correlation with C-terminal telopeptide of type 1 collagen and total cholesterol.

Conclusion

Serum LECT2 levels were significantly upregulated in osteoporosis subjects and correlated with the severity of bone loss. Serum LECT2 could be a potential biomarker to assess the risk of bone loss.

COP27 Climate Change Conference: Urgent Action Needed for Africa and the World: Wealthy nations must step up support for Africa and vulnerable countries in addressing past, present and future impacts of climate change †

Atwoli, Lukoye [1] ; Erhabor, Gregory E [2] ; Gbakima, Aiah A [3] ; Haileamlak, Abraham [4] ; Jean-Marie Kayembe Ntumba [5] ; Kigera, James [6] ; Laybourn-Langton, Laurie [7] ; Mash, Bob [8] ; Muhia, Joy [9] ; Fhumulani Mavis Mulaudzi [10] ; Ofori-Adjei, David [11] ; Friday Okonofua [12] ; Rashidian, Arash [13] ; El-Adawy, Maha [14] ; Sidibé, Siaka [15] ; Snouber, Abdelmadjid [16] ; Tumwine, James [17] ; Yassien, Mohammad Sahar [18] ; Yonga, Paul [19] ; Zakhama, Lilia [20] ; Zielinski, Chris [21] 1 Editor-in-Chief, East African Medical Journal 2 Editor-in-Chief, West African Journal of Medicine 3 Editor-in-Chief, Sierra Leone Journal of Biomedical Research 4 Editor-in-Chief, Ethiopian Journal of Health Sciences 5 Chief Editor, Annales Africaines de Medecine 6 Editor-in-Chief, Annals of African Surgery 7 University of Exeter , UK 8 Editor-in-Chief, African Journal of Primary Health Care &Family Medicine 9 London School of Medicine and Tropical Hygiene 10 Editor-in-Chief, Curationis 11 Editor-in-Chief, Ghana Medical Journal 12 Editor-in-Chief, African Journal of Reproductive Health 13 Executive Editor, Eastern Mediterranean Health Journal 14 Director of Health Promotion, Eastern Mediterranean Health Journal 15 Director of

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Compliance with the Current NCCN Guidelines and Its Critical Role in Pancreatic Adenocarcinoma

Petersen, Jeffrey M [1]
; Jhala, Darshana N [1] [1] Corporal Michael J Crescenz Veteran Affairs Medical Center , Philadelphia, Pennsylvania , USA

Link dokumen ProQuest

ABSTRAK (ENGLISH)

Objectives

Since 2019, the National Comprehensive Cancer Network (NCCN) has recommended genetic testing for patients diagnosed with pancreatic adenocarcinoma that includes universal germline testing and tumor gene profiling for metastatic, locally advanced, or recurrent disease. However, testing compliance with this guideline has not yet been published in the English literature.

Methods

A quality assurance/quality improvement retrospective review was done to identify patients diagnosed with pancreatic adenocarcinoma from January 2019 to February 2021 to include the patient's clinical status and genetic test results.

Results

There were 20 patient cases identified with pancreatic adenocarcinoma. A total of 11 cases had molecular tumor gene profiling and microsatellite instability/mismatch repair (MSI/MMR) testing performed and 1 case had only MSI/MMR testing by immunohistochemistry performed. Only 3 patients of the 20 in total received germline testing.

Conclusion

There was a significant number of patients for whom tumor gene profiling or germline testing had never been attempted as per recommended NCCN guidelines.

Application of the Single-Molecule Real-Time Technology (SMRT) for Identification of HKαα Thalassemia Allele

Zhang, Min [1] ; Lin, Zhaodong [2] ; Chen, Meihuan [1] ; Pan, Yali [3] ; Zhang, Yanhong [4] ; Chen, Lingji [1] ; Lin, Na [1] ; Ren, Yuanyuan [5] ; Jia, Hongjin [5] ; Cai, Meiying [1] ; Xu, Liangpu [1] ; Huang, Hailong [1] [1] Medical Genetic Diagnosis and Therapy Center of Fujian Maternity and Child Health Hospital College of Clinical Medicine for Obstetrics &Gynecology and Pediatrics, Fujian Medical University, Fujian Provincial Key Laboratory of Prenatal Diagnosis and Birth Defect , Fuzhou , China [2] Department of Clinical Laboratorial Examination, The First Hospital Affiliated to Fujian Medical University , Fuzhou , China [3] Medical Technology and Engineering College of Fujian Medical University , Fuzhou , China [4] Fujian University of Traditional Chinese Medicine , Fuzhou , China [5] Berry Genomics Corporation , Beijing , China

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ABSTRAK (ENGLISH)

Objective

Single-molecule real-time technology (SMRT) is a sequencing technology using the DNA polymerases and fluorescently tagged nucleotides to accurately sequence DNA strands. The purpose of this study was to evaluate the detection accuracy of SMRT for identification of the Hong Kongαα (HKαα) thalassemia allele.

Methods

We conducted a blinded study of 33 samples of known HKαα alleles. These alleles were detected using SMRT to evaluate accuracy.

Results

We conducted a blinded study of 33 known HKαα samples and found all HKαα variants detected by SMRT to be concordant with those independently assigned by gap-polymerase chain reaction (gap-PCR), reverse dot blot hybridization, and 2-round nested PCR. In addition, SMRT detected 2 β-thalassemia variants that were missed by conventional techniques.

Conclusion

The results demonstrate that SMRT offers a higher detection accuracy of thalassemia rare and new loci. It is an efficient, reliable, and broad-spectrum test that can be widely used for thalassemia screening in the clinic.

Causes of Inappropriate Laboratory Test Ordering from the Perspective of Medical Laboratory Technical Professionals: Implications for Research and Education

VanSpronsen, Amanda D [1] ; Zychla, Laura [2] ; Turley, Elona [3] ; Villatoro, Valentin [1] ; Yuan, Yan [4] ; Ohinmaa, Arto [4] [1] Department of Laboratory Medicine &Pathology, University of Alberta , Edmonton, Alberta , Canada [2] Research, Canadian Association for Medical Radiation Technologists , Ottawa, Ontario , Canada [3] Coagulation Medicine, Alberta Precision Laboratories , Edmonton, Alberta , Canada [4] School of Public Health, University of Alberta , Edmonton, Alberta , Canada

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ABSTRAK (ENGLISH)

Objective

Inappropriate laboratory test ordering is a significant and persistent problem. Many causes have been identified and studied. Medical laboratory professionals (MLPs) are technical staff within clinical laboratories who are uniquely positioned to comment on why inappropriate ordering occurs. We aimed to characterize existing MLP perceptions in this domain to reveal new or underemphasized interventional targets.

Methods

We developed and disseminated a self-administered survey to MLPs in Canada, including open-ended responses to questions about the causes of inappropriate laboratory test ordering.

Results

Four primary themes were identified from qualitative analysis: ordering-provider factors, communication factors, existing test-ordering processes, and patient factors. Although these factors can largely be found in previous literature, some are under-studied.

Conclusion

MLP insights into nonphysician triage ordering and poor result communication provide targets for further investigation. A heavy focus on individual clinician factors suggests that current understandings and interprofessional skills in the MLP population can be improved.

Dokumen 22 dari 24

Evaluation of RT-LAMP Assay for Rapid Detection of SARS-CoV-2

Li, Ya-Ping [1] ; Xun-Jie Cao [1] ; Luo, Xin [1] ; Tian-Ao Xie [1] ; Wan-Jun, Liu [1] ; Shi-Ming, Xie [1] ; Lin, Min [1] ; Xu-Guang Guo [1] [1] Department of Clinical Laboratory Medicine, The Third Affiliated Hospital of Guangzhou Medical University , Guangzhou , China

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ABSTRAK (ENGLISH)

Objective

To evaluate the accuracy of the reverse transcription loop-mediated isothermal amplification (RT-LAMP) assay for rapid detection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in community or primary-care settings.

Method

We systematically searched the Web of Science, Embase, PubMed, and Cochrane Library databases. We conducted quality evaluation using ReviewManager software (version 5.0). We then used MetaDisc software (version 1.4) and Stata software (version 12.0) to build forest plots, along with a Deeks funnel plot and a bivariate boxplot for analysis.

Result

Overall, the sensitivity, specificity, and diagnostic odds ratio were 0.79, 0.97, and 328.18, respectively. The sensitivity for the subgroup with RNA extraction appeared to be higher, at 0.88 (0.86–0.90), compared to the subgroup without RNA extraction, at 0.50 (0.45–0.55), with no significant difference in specificity.

Conclusion

RT-LAMP assay exhibited high specificity regarding current SARS-CoV-2 infection. However, its overall sensitivity was relatively moderate. Extracting RNA was found to be beneficial in improving sensitivity.

Dokumen 23 dari 24

Application of the Fluorescence Method on Sysmex XN9000 Hematology Analyzer for Correcting Platelet Count in Individuals with Microcytosis

Deng, Jiankai [1] ; Xie, Shuhua [1] ; Chen, Yaoming [1] ; Ma, Qinghua [1] ; He, Yuting [1] ; Liu, Min [1] ; Wang, Dong [1] ; Yu, Xuegao [1] [1] Department of Laboratory Medicine, The First Affiliated Hospital, Sun Yat-sen University , Guangzhou , China

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ABSTRAK (ENGLISH)

Objective

Although small red blood cells are a well-known analytical pitfall that could cause artifactual increase of the platelet count, limited information is available on the accuracy of impedance platelet counting in cases with microcytosis. The aim of this study is to assess the accuracy of impedance platelet counting in the presence of small red blood cells, and to establish the optimal mean corpuscular volume (MCV) cutoff to endorse fluorescence platelet counting.

Methods

In this study, platelet counts estimated by the impedance method on the Sysmex XN9000 analyzer (Sysmex, Kobe, Japan) were compared with those provided by the fluorescence method. The accuracy of impedance platelet counting was assessed. Receiver operating characteristic curve was used to evaluate the performance of MCV in predicting falsely increased platelet counts.

Results

There was a tendency for the impedance method to overestimate the platelet count in samples with 70 fL <MCV ≤ 80 fL, 60 fL <MCV ≤ 70 fL, MCV ≤ 60 fL. Receiver operating characteristic curve analysis showed that a 73.5fL cutoff of MCV was highly sensitive in predicting falsely increased platelet counts.

Conclusion

In cases with MCV <73.5 fL, we strongly suggest that the platelet counts obtained by the impedance method on the Sysmex XN9000 analyzer should be checked and corrected by fluorescence counting.

Diagnostic Efficiency of Serum-Based Infrared Spectroscopy in Detecting Breast Cancer: A Meta-Analysis

Pabico, Louise Julie [1] ; Jennica Naiomi Jaron [1] ; Marc Erickson Mosqueda [1] ; Wu, Jorge Jaesen [1] ; Tiongco, Raphael Enrique [2]
; Albano, Pia Marie [1] [1] Department of Biological Sciences, College of Science, University of Santo Tomas , Manila , Philippines [2] Department of Medical Technology, College of Allied Medical Professions, Angeles University Foundation , Angeles City , Philippines

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ABSTRAK (ENGLISH)

Background

The advancement of Fourier transform infrared (FTIR) spectroscopy as a potential diagnostic tool in the clinical setting has been studied over the years, particularly its application in cancer diagnostics.

Objective

To summarize previous research on FTIR spectroscopy in detecting breast cancer using serum specimens.

Methods

Related literature was searched and screened from various databases. Relevant data were then extracted, tabulated, and analyzed using Meta-DiSc 1.4 software.

Results

Sensitivity and specificity rates were 90% to 100% and 80% to 95%, respectively. The area under the receiver operating characteristic curve was at 0.9729, indicating that serum analysis via FTIR spectroscopy can accurately discriminate between healthy individuals and patients with breast cancer.

Conclusion

Overall, FTIR spectroscopy for breast cancer diagnosis using serum specimens shows promising results. However, further studies are still needed to validate these claims.

Daftar Pustaka

Citation style: APA 6th - Annotated with Abstracts - American Psychological Association, 6th Edition

Guo, G., Sun, M., Li, Y., Yang, W., Wang, X., Yu, Z., . . . Sun, C. (2023). Serum ferritin has limited prognostic value on mortality risk in patients with decompensated cirrhosis: A propensity score matching analysis. Labmedicine, 54(1), 47-55. doi:https://doi.org/10.1093/labmed/lmac064

Objective The prognostic value of serum ferritin remains elusive in the literature. We aimed to examine the association between serum ferritin and mortality risk in cirrhosis. Methods A total of 257 cirrhotic patients were recruited. The cut-off of serum ferritin was determined by X-tile. The Cox regression and Kaplan-Meier method were used. A 1:1 propensity score matching (PSM) was performed to diminish the impacts of selection bias and possible confounders. Results The difference regarding mortality was mostly significant for serum ferritin >158 ng/mL. Before PSM, serum ferritin >158 ng/mL was an independent predictor of mortality. However, the clinical relevance of high ferritin level for prognostication was blunted after PSM (survival rate: 86.8% vs 96.3%, P = .078). Cox regression indicated that model for end-stage liver disease remains only independent risk factor of 180-day mortality after PSM. Conclusion Serum ferritin may not serve as an independent prognostic indicator of mortality risk in decompensated cirrhotic patients.

Gaab, M. E., Prim, O. L., Ibañez, D., Korina, D. M., Fatima, M. R., Tiongco, R. E., & Albano, P. M. (2023). A meta-analysis on the association of colibactin-producing pks+ escherichia coli with the development of colorectal cancer. Labmedicine, 54(1), 75-82. doi:https://doi.org/10.1093/labmed/lmac072

Objective Previous studies on the association between pks+Escherichia coli and colorectal cancer (CRC) demonstrated conflicting results. Hence, we performed a meta-analysis to obtain more precise estimates. Methods Related literature was obtained from PubMed, ScienceDirect, Google Scholar, and Cochrane Library. Data were then extracted, summarized, and subjected to analysis using Review Manager 5.4 by computing for the pooled odds ratios at the 95% confidence interval. Results Overall analysis showed that individuals carrying pks+E coli had a greater risk of developing CRC. Subgroup analysis further showed that individuals from Western countries carrying pks+E coli and individuals with pks+E coli in their tissue samples had increased risk of developing CRC. Conclusion Results of this meta-analysis suggest that individuals with pks+E coli have a greater risk of developing CRC. However, more studies are needed to confirm our claims.

Che, G., Liu, F., Chang, L., Lai, S., Teng, J., & Yang, Q. (2023). Mycoplasma hominis meningitis diagnosed by metagenomic next-generation sequencing in a preterm newborn: A case report and literature review. Labmedicine, 54(1), e24-e28. doi:https://doi.org/10.1093/labmed/lmac078

Mycoplasma hominis is mainly colonized in the genital tract and vertically transmitted to newborns; however, it rarely causes neonatal meningitis. We report a case of M. hominis meningitis in a premature infant. She was admitted to our hospital for treatment after 6 days of repeated fever. After admission, repeated cerebrospinal fluid (CSF) analysis showed that leukocytes and protein in CSF increased substantially and glucose decreased, but there was no growth in conventional CSF culture. The patient was diagnosed with M. hominis meningitis by metagenomic next-generation sequencing (mNGS). The antibiotic therapy used for the neonate was meropenem, vancomycin, and ampicillin against bacterial infection and azithromycin against mycoplasma infection. The child was subsequently considered cured and discharged from the hospital and followed up regularly in the neurology clinic. The mNGS may be a promising and effective diagnostic technique for identifying uncommon pathogens of meningitis in patients with meningitis symptoms and signs without microbial growth in routine CSF culture.

Fadaei, R., Samaneh, M. A., Laher, I., & Khazaie, H. (2023). Increased levels of ANGPTL3 and CTRP9 in patients with obstructive sleep apnea and their relation to insulin resistance and lipid metabolism and markers of endothelial dysfunction. Labmedicine, 54(1), 83-89. doi:https://doi.org/10.1093/labmed/lmac073

Objective Obstructive sleep apnea (OSA) has a close relation with obesity and perturbation in adipokines and hepatokines, which are linked to OSA consequences such as insulin resistance, dyslipidemia, and endothelial

dysfunction. This study aimed to assess the relation of C1q/TNF-related protein 9 (CTRP9) and angiopoietin-like protein 3 (ANGPTL3) with OSA and biochemical measurements. Methods Serum levels of ANGPTL3, CTRP9, adiponectin, leptin, intercellular adhesion molecule 1 (ICAM-1), and vascular cell adhesion protein 1 (VCAM-1) were determined in 74 OSA patients and 27 controls using enzyme-linked immunosorbent assay kits. Results Levels of ANGPTL3, CTRP9, leptin, ICAM-1, and VCAM-1 were increased in the patients compared to the controls, whereas adiponectin levels decreased. ANGPTL3 had a positive correlation with total cholesterol, triglyceride, low-density lipoprotein cholesterol, ICAM-1, and VCAM-1 and was inversely correlated with leptin. CTRP9 showed a positive correlation with body mass index, insulin resistance, ICAM-1, and VCAM-1. Conclusion The results indicated the relation of ANGLTP3 and CTRP9 with OSA and its complications, which suggested a possible role for these factors in the consequences of OSA.

Shi, J., Li, W., Tao, R., Zhou, D., Guo, Y., Fu, H., . . . Mao, J. (2023). Association of catalase gene polymorphisms with idiopathic nephrotic syndrome in a chinese pediatric population. Labmedicine, 54(1), 35-40. doi:https://doi.org/10.1093/labmed/lmac062

Objective Our aim was to investigate the association between gene polymorphisms in catalase (CAT), a well-known oxidative stress regulator, and susceptibility to idiopathic nephrotic syndrome (INS) or responses to steroid therapy in a Chinese pediatric population. Methods We analyzed 3 CAT single-nucleotide polymorphisms (SNVs; rs7943316, rs769217, and rs12270780) using multi-polymerase chain reaction combined with next-generation sequencing in 183 INS patients and 100 healthy controls. Results For the allele and genotype frequencies of the CAT SNVs, no significant differences were observed between INS patients and controls. Patients with C allele of CAT rs769217 had a higher risk of developing steroid-dependent nephrotic syndrome than the steroid-sensitive nephrotic syndrome patients (P = 0.018; odds ratio = 1.76). Conclusion Our data suggests that genetic variations in CAT were unlikely to confer susceptibility to INS in Chinese children, whereas the C allele of the CAT rs769217 polymorphism showed a strong association with steroid-dependent responses in Chinese INS children.

Baba, H., Bouqdayr, M., Saih, A., Bensghir, R., Ouladlahsen, A., Sodqi, M., . . . Wakrim, L. (2023). Association between methylene-tetrahydrofolate reductase C677T polymorphism and human immunodeficiency virus type 1 infection in morocco. Labmedicine, 54(1), 23-29. doi:https://doi.org/10.1093/labmed/lmac081

Human immunodeficiency virus type 1 (HIV-1) infection varies substantially among individuals. One of the factors influencing viral infection is genetic variability. Methylenetetrahydrofolate reductase (MTHFR) C677T polymorphism is a genetic factor that has been correlated with different types of pathologies, including HIV-1. The MTHFR gene encodes the MTHFR enzyme, an essential factor in the folate metabolic pathway and in maintaining circulating folate and methionine at constant levels, thus preventing the homocysteine accumulation. Several studies have shown the role of folate on CD4+ T lymphocyte count among HIV-1 subjects. In this case-control study we aimed to determine the association between the MTHFR C677T polymorphism and HIV-1 infection susceptibility, AIDS development, and therapeutic outcome among Moroccans. The C677T polymorphism was genotyped by polymerase chain reaction followed by fragment length polymorphism digestion in 214 participants living with HIV-1 and 318 healthy controls. The results of the study revealed no statistically significant association between MTHFR C677T polymorphism and HIV-1 infection (P > .05). After dividing HIV-1 subjects according to their AIDS status, no significant difference was observed between C677T polymorphism and AIDS development (P > .05). Furthermore, regarding the treatment response outcome, as measured by HIV-1 RNA viral load and CD4+ T cell counts, no statistically significant association was found with MTHFR C677T polymorphism. We conclude that, in the genetic context of the Moroccan population, MTHFR C677T polymorphism does not affect HIV-1 infection susceptibility, AIDS development, or response to treatment. However, more studies should be done to investigate both genetic and nutritional aspects for more conclusive results.

Jacobs, J. W., Horstman, E., Gisriel, S. D., Tormey, C. A., & Sostin, N. (2023). Incidental discovery of a patient with the bombay phenotype. Labmedicine, 54(1), e14-e17. doi:https://doi.org/10.1093/labmed/lmac075

Bombay phenotype, an exceptionally rare blood type in individuals outside of Southeast Asia, occurs in approximately 1 in 1,000,000 individuals in Europe. This blood phenotype is characterized by the absence of the H antigen on red blood cells (RBCs) and in secretions. As the H antigen is the structure on which the ABO system is built, individuals lacking this antigen are unable to produce A or B antigens and appear as type O on routine ABO phenotyping. H deficiency does not cause ill effect; however, these individuals produce an anti-H alloantibody capable of causing severe acute hemolytic transfusion reactions when exposed to RBCs that express the H antigen. In this case study, we highlight the incidental discovery of a patient with Bombay phenotype in a North American hospital system, expected test results, the immunologic and genetic basis underlying the Bombay and para-Bombay phenotypes, and methods to ensure availability of compatible blood.

About the journal. (2023). Labmedicine, 54(1), 1. doi:https://doi.org/10.1093/labmed/lmac144

Noulsri, E., & Lerdwana, S. (2023). Blood donors with thalassemic trait, glucose-6-phosphate dehydrogenase deficiency trait, and sickle cell trait and their blood products: Current status and future perspective. Labmedicine, 54(1), 6-12. doi:https://doi.org/10.1093/labmed/lmac061

The use of blood products for different medical purposes has increased in recent years. To meet increasing demand, some blood centers allow volunteer donors with thalassemic trait, glucose-6-phosphate dehydrogenase deficiency (G6PD) trait, and sickle cell trait (SCT) to donate blood if their hemoglobin values fall within acceptable ranges and show no signs of hemolysis. Currently, there are no standard guidelines or policies regarding the use or management of blood products obtained from these donors. However, in recent years, there has been advanced research on eligible donors who have these underlying conditions. In this review, we summarize the current knowledge from in vitro and in vivo studies regarding donor characteristics, changes in physical and biochemical parameters in blood products during processing and storage, and posttransfusion efficacy of blood products. In addition, we discuss some unresolved issues concerning blood products from thalassemic trait, G6PD-deficiency trait, and SCT donors.

McPherson, P. A. C., McClements, O. S., & Johnston, B. M. (2023). Pourbiax diagrams as an aid to understanding the impact of Acid/Base disturbance on blood glucose point-of-care testing. Labmedicine, 54(1), 72-74. doi:https://doi.org/10.1093/labmed/lmac069

Objective Assays based on redox reactions that involve proton transfer are vulnerable to artifactual findings in metabolic acidosis/alkalosis. We evaluated the impact of pH on the measurement of blood glucose by the glucose dehydrogenase/pyrroloquinoline quinone system used in point-of-care-testing. Methods We applied a series of thermodynamic equations to adjust the Gibbs energy for the pyrroloquinoline quinone couple. This adjusts values taken under standard conditions to those more closely resembling the physiological state. Results Under standard conditions, the pyrroloquinoline quinone couple has Eo = −0.125 V whereas adjustment to the physiological state (pH 7.40, ionic strength 0.15 mol/L, and temperature 310.15°K) yields Eo′ = −0.166 V. This corresponds to an uncertainty in blood glucose determination of approximately 0.13 mmol/L. Conclusion We have demonstrated that the impact of pH on blood glucose determination by the glucose dehydrogenase/pyrroloquinoline quinone system (under physiologically relevant conditions of ionic strength and temperature) is not clinically significant.

Zeng, Z., Guo, H., Chen, L., Lin, Z., Guan, W., Wang, Y., . . . Yang, Z. (2023). Culturing severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) for diagnosis and genome sequencing. Labmedicine, 54(1), 30-34. doi:https://doi.org/10.1093/labmed/lmac060

Objective The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) nucleic acid detection “re-positive” phenomenon is encountered clinically. The accuracy of a viral nucleic acid test is crucial to prevent reintroduction of the virus into the community. This study evaluated the effect of virus culturing on increasing the sensitivity and specificity of real-time polymerase chain reaction (RT-PCR) detection and viral genomic sequencing. Methods A series of tenfold dilutions of a SARS-CoV-2 viral stock were conducted and cultured for either 24 or 48 hours. The viral load of cultured samples was determined by RT-PCR. The cultured and non-cultured samples of 1x 50% tissue culture infectious dose (TCID50) were sequenced using metagenomic next-generation sequencing. The depth and

coverage of SARS-CoV-2 genome were measured. Results The lowest viral load detectable in a sample with RT-PCR was 0.01 TCID50. After a 24-h culture, the viral ORF 1ab and N-gene cycle threshold (CT) values were reduced by 4.4 points and 1 point, respectively. One TCID50 viral load of post 24-h culture revealed the sequence depth reached an average of 752 reads, compared with 0.15 in the nonculture; furthermore, the coverage was 99.99% while 6.42% in the nonculture. Conclusion These results indicate that virus culturing can significantly increase the viral load, which can increase the certainty of true-positive detection of the viral nucleic acids, and improve the quality of virus genomic sequencing.

Omar, C. P., Peker, D., Zhang, L., & Papadantonakis, N. (2023). Essential thrombocythemia and post-essential thrombocythemia myelofibrosis: Updates on diagnosis, clinical aspects, and management. Labmedicine, 54(1), 13-22. doi:https://doi.org/10.1093/labmed/lmac074

Although several decades have passed since the description of myeloproliferative neoplasms (MPN), many aspects of their pathophysiology have not been elucidated. In this review, we discuss the mutational landscape of patients with essential thrombocythemia (ET), prognostic scores and salient pathology, and clinical points. We discuss also the diagnostic challenges of differentiating ET from prefibrotic MF. We then focus on post-essential thrombocythemia myelofibrosis (post-ET MF), a rare subset of MPN that is usually studied in conjunction with post-polycythemia vera MF. The transition of ET to post-ET MF is not well studied on a molecular level, and we present available data. Patients with secondary MF could benefit from allogenic hematopoietic stem cell transplantation, and we present available data focusing on post-ET MF.

Zou, K., Du, Q., Chen, X., Tang, P., & Liang, H. (2023). MLL1:EZH2 ratio in uterine secretions and endometrial receptivity in patients with endometriosis. Labmedicine, 54(1), 90-97. doi:https://doi.org/10.1093/labmed/lmac067

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