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Novel PKD1 Mutations in Patients with Autosomal Dominant Polycystic Kidney Disease

Kim, Hyerin [1] ; Hyung-Hoi, Kim [1] ; Chang, Chulhun L [2] ; Song, Sang Heon [3] ; Kim, Namhee [4]
[1] Department of Laboratory Medicine, Pusan National University Hospital, Busan, Korea; Biomedical Research Institute, Pusan National University Hospital, Busan, Korea [2] Department of Laboratory Medicine, Pusan National University Yangsan Hospital, Yangsan, Korea [3] Biomedical Research Institute, Pusan National University Hospital, Busan, Korea; Division of Nephrology, Department of Internal Medicine, Pusan National University Hospital, Busan, Korea [4] Biomedical Research Institute, Pusan National University Hospital, Busan, Korea; Department of Laboratory Medicine, Dong-A University College of Medicine, Busan, Korea

ABSTRAK (ENGLISH)

Objective

Autosomal dominant polycystic kidney disease (ADPKD) is the most common genetic kidney disease. Identifying mutated causative genes can provide diagnostic and prognostic information. In this study, we describe the clinical application of a next generation sequencing (NGS)-based, targeted multi-gene panel test for the genetic diagnosis of patients with ADPKD.

Methods

We applied genetic analysis on 26 unrelated known or suspected patients with ADPKD. A total of 10 genes related to cystic change of kidney were targeted. Detected variants were classified according to standard guidelines.

Results

We identified 19 variants (detection rate: 73.1%), including *PKD1* (n = 18) and *PKD2* (n = 1). Of the 18 *PKD1* variants, 8 were novel.

Conclusion

Multigene panel test can be a comprehensive tool in a clinical setting for genetic diagnosis of ADPKD. It allows us to identify clinically significant novel variants and confirm the diagnosis, and these objectives are difficult to achieve using conventional diagnostic tools.

DETAIL

Subjek:	Kidney diseases
Pengidentifikasi/kata kunci:	Polycystic kidney disease; Sequence analysis; PKD1; PKD2

Judul:	Novel PKD1 Mutations in Patients with Autosomal Dominant Polycystic Kidney Disease
Pengarang:	Kim, Hyerin1; Hyung-Hoi, Kim1; Chang, Chulhun L2; Song, Sang Heon3; Kim, Namhee4 1 Department of Laboratory Medicine, Pusan National University Hospital, Busan, Korea; Biomedical Research Institute, Pusan National University Hospital, Busan, Korea2 Department of Laboratory Medicine, Pusan National University Yangsan Hospital, Yangsan, Korea3 Biomedical Research Institute, Pusan National University Hospital, Busan, Korea; Division of Nephrology, Department of Internal Medicine, Pusan National University Hospital, Busan, Korea4 Biomedical Research Institute, Pusan National University Hospital, Busan, Korea; Department of Laboratory Medicine, Dong-A University College of Medicine, Busan, Korea
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CRISPR-Based Approaches for Efficient and Accurate Detection of SARS-CoV-2

Zhang, Wancun [1] ; Liu, Kangbo [2] ; Zhang, Pin [3] ; Weyland Cheng [3] ; Li, Linfei [3] ; Zhang, Fan [4] ; Yu, Zhidan [3] ; Li, Lifeng [3] ; Zhang, Xianwei [5] [1] Henan Key Laboratory of Children's Genetics and Metabolic Diseases, Children's Hospital Affiliated to Zhengzhou University, Henan Children's Hospital, Zhengzhou, China; Zhengzhou Key Laboratory of Precise Diagnosis and Treatment of Children's Malignant Tumors, Department of Pediatric Oncology Surgery, Children's Hospital Affiliated to Zhengzhou University, Zhengzhou, China [2] Biological Testing Room, Henan Medical Equipment Inspection Institute, Henan Medical Equipment Inspection and Testing Engineering Technology Research Center, Henan Medical Equipment Biotechnology and Application Engineering Research Center, Zhengzhou, China [3] Henan Key Laboratory of Children's Genetics and Metabolic Diseases, Children's Hospital Affiliated to Zhengzhou University, Henan Children's Hospital, Zhengzhou, China [4] Department of Orthopedics, Fengqiu County People's Hospital, Xinxiang, China [5] Zhengzhou Key Laboratory of Precise Diagnosis and Treatment of Children's Malignant Tumors, Department of Pediatric Oncology Surgery, Children's Hospital Affiliated to Zhengzhou University, Zhengzhou, China

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ABSTRAK (ENGLISH)

An outbreak of COVID-19, caused by infection with SARS-CoV-2 in Wuhan, China in December 2019, spread throughout the country and around the world, quickly. The primary detection technique for SARS-CoV-2, the reverse-transcription polymerase chain reaction (RT-PCR)–based approach, requires expensive reagents and equipment and skilled personnel. In addition, for SARS-CoV-2 detection, specimens are usually shipped to a designated laboratory for testing, which may extend the diagnosis and treatment time of patients with COVID-19. The latest research shows that clustered regularly interspaced short palindromic repeats (CRISPR)–based approaches can quickly provide visual, rapid, ultrasensitive, and specific detection of SARS-CoV-2 at isothermal conditions. Therefore, CRISPR-based approaches are expected to be developed as attractive alternatives to conventional RT-PCR methods for the efficient and accurate detection of SARS-CoV-2. Recent advances in the field of CRISPR-based biosensing technologies for SARS-CoV-2 detection and insights into their potential use in many applications are reviewed in this article.

DETAIL

Subjek:	CRISPR; Severe acute respiratory syndrome coronavirus 2; Coronaviruses; COVID-19; Medical diagnosis
Pengidentifikasi/kata kunci:	SARS-CoV-2; 2019-nCoV; COVID-19; CRISPR; diagnosis

Judul:	CRISPR-Based Approaches for Efficient and Accurate Detection of SARS-CoV-2
Pengarang:	Zhang, Wancun1; Liu, Kangbo2; Zhang, Pin3; Weyland Cheng3; Li, Linfei3; Zhang, Fan4; Yu, Zhidan3; Li, Lifeng3; Zhang, Xianwei51 Henan Key Laboratory of Children's Genetics and Metabolic Diseases, Children's Hospital Affiliated to Zhengzhou University, Henan Children's Hospital, Zhengzhou, China; Zhengzhou Key Laboratory of Precise Diagnosis and Treatment of Children's Malignant Tumors, Department of Pediatric Oncology Surgery, Children's Hospital Affiliated to Zhengzhou University, Zhengzhou, China2 Biological Testing Room, Henan Medical Equipment Inspection Institute, Henan Medical Equipment Inspection and Testing Engineering Technology Research Center, Henan Medical Equipment Biotechnology and Application Engineering Research Center, Zhengzhou, China3 Henan Key Laboratory of Children's Genetics and Metabolic Diseases, Children's Hospital Affiliated to Zhengzhou University, Henan Children's Hospital, Zhengzhou, China4 Department of Orthopedics, Fengqiu County People's Hospital, Xinxiang, China5 Zhengzhou Key Laboratory of Precise Diagnosis and Treatment of Children's Malignant Tumors, Department of Pediatric Oncology Surgery, Children's Hospital Affiliated to Zhengzhou University, Zhengzhou, China
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Effects of Cell-Derived Microparticles on Immune Cells and Potential Implications in Clinical Medicine

Noulsri, Egarit [1]

[1] Research Division, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

ABSTRAK (ENGLISH)

In the past few years, interest has increased in cell-derived microparticles (MPs), which are defined by their size of from 0.1 to 1 μm, and can be derived from various cell types, including endothelial cells, leukocytes, red blood cells (RBCs), and platelets. These MPs carry negatively charged phosphatidylserine (PS) on their surfaces and proteins packaged from numerous cellular components. MPs that have been shed by the body can play important roles in the pathophysiology of diseases and can affect various biological systems. Among these systems, the immune components have been shown to be modulated by MPs. Therefore, understanding the roles of MPs in the immune system is crucial to developing alternative therapeutic treatments for diseases. This review describes the effects of MPs on various immune cells and provides plausible potential applications of the immune-modulating properties of MPs in clinical medicine.

DETAIL

Subjek:	Clinical medicine
Pengidentifikasi/kata kunci:	laboratory; microparticle; quantitation; flow cytometry; immune cell; immune modulation
Judul:	Effects of Cell-Derived Microparticles on Immune Cells and Potential Implications in Clinical Medicine
Pengarang:	Noulsri, Egarit1 1 Research Division, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand
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Potential Use of Antigen-Based Rapid Test for SARS-CoV-2 in Respiratory Specimens in Low-Resource Settings in Egypt for Symptomatic Patients and High-Risk Contacts

Abeer Mohamed Abdelrazik [1] ; Shahira Morsy Elshafie [1] ; Abdelaziz, Hossam M [1 1] Clinical Pathology Department, Faculty of Medicine, Fayoum University Hospital, Fayoum, Egypt

ABSTRAK (ENGLISH)

Objective

Because of the rapidly emerging SARS-CoV-2 pandemic and its wide public health challenges, rapid diagnosis is essential to decrease the spread. Antigen-based rapid detection tests are available; however, insufficient data about their performance are available.

Methods

The lateral-flow immunochromatographic BIOCREDIT COVID-19 antigen test was evaluated using nasopharyngeal swabs in a viral transport medium from patients with confirmed infection, contacts, and exposed healthcare professionals at Fayoum University Hospital in Egypt. Test performance was determined in comparison to the SARS-CoV-2 real-time reverse-transcription polymerase chain reaction (RT-PCR) test.

Results

Three hundred ten specimens from 3 categories—patients with confirmed diagnoses of COVID-19, contacts, and exposed healthcare professionals—were included; 188 specimens were RT-PCR-positive, from which 81 were detected by rapid antigen test. Overall sensitivity was 43.1%. Sensitivity was significantly higher in specimens with high viral loads.

Conclusion

Poor sensitivity of the BIOCREDIT COVID-19 test does not permit its use for diagnosis, and it can only be used in conjunction with RT-PCR for screening.

DETAIL

Subjek:	Antigens; Severe acute respiratory syndrome coronavirus 2; Coronaviruses; COVID-19
Lokasi:	Egypt
Pengidentifikasi/kata kunci:	antigen-based rapid test; COVID-19; RT-PCR; SARS-CoV-2
Judul:	Potential Use of Antigen-Based Rapid Test for SARS-CoV-2 in Respiratory Specimens in Low-Resource Settings in Egypt for Symptomatic Patients and High-Risk Contacts
Pengarang:	Abeer Mohamed Abdelrazik1; Shahira Morsy Elshafie1; Abdelaziz, Hossam M11 Clinical Pathology Department, Faculty of Medicine, Fayoum University Hospital, Fayoum, Egypt

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Acute Hemolytic Transfusion Reaction Due to Pooled Platelets: A Rare but Serious Adverse Event

Gammon, Richard [1]
; Cook, Susan [2] ; Trinkle, Anthony [3] ; Korena, Thomas [1] ; Benson, Kaaron [2 1] Scientific Medical and Technical Direction, OneBlood, Orlando, Florida [2] Department of Pathology and Laboratory Medicine, Moffitt Cancer Center, Tampa, Florida [3] Immunohematology Reference Laboratory, OneBlood, St. Petersburg, Florida

ABSTRAK (ENGLISH)

A female patient aged 65 years with blood group A with relapsed lymphoma had thrombocytopenia; leukocyte-reduced group O prestorage pooled platelet concentrates (PPLTs) were transfused without adverse events. She was discharged home, but 1.5 hours later she returned with fever and dark urine. Hypotension and tachycardia developed; she was admitted to the intensive care unit. Post-transfusion blood and urine samples were obtained. Serial dilutions from 5 donor testing tubes and a simulated PLT pool were performed and read at immediate spin and IgG. Testing confirmed an acute hemolytic transfusion reaction (AHTR): elevated lactate dehydrogenase (996 U/L; normal range 135 U/L–225 U/L) and undetectable haptoglobin (<10 mg/dL; normal range 30 mg/dL–200 mg/dL) levels. Urinalysis showed dark amber urine but no significant quantity of red blood cells. At 37ºC the simulated pool and donor number 5 had high-titer anti-A. As a precaution, the donor was permanently deferred. Research has shown that PLT-associated AHTR has occurred with apheresis platelets but is very rare with whole blood–derived PLTs.

DETAIL

Subjek:	Urine
Pengidentifikasi/kata kunci:	hemolysis; antibodies; transfusion practice; transfusion reactions
Judul:	Acute Hemolytic Transfusion Reaction Due to Pooled Platelets: A Rare but Serious Adverse Event
Pengarang:	Gammon, Richard1 ; Cook, Susan2; Trinkle, Anthony3; Korena, Thomas1; Benson, Kaaron21 Scientific Medical and Technical Direction, OneBlood, Orlando, Florida2 Department of Pathology and Laboratory Medicine, Moffitt Cancer Center, Tampa, Florida3 Immunohematology Reference Laboratory, OneBlood, St. Petersburg, Florida
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SBAR as a Standardized Communication Tool for Medical Laboratory Science Students

Oliveira, Ana L [1] ; Brown, Michelle [2 1] Department of Clinical and Diagnostic Sciences, School of Health Professions, University of Alabama at Birmingham, Birmingham, Alabama [2] Department of Health Services Administration, School of Health Professions, University of Alabama at Birmingham, Birmingham, Alabama; Office of Interprofessional Simulation for Innovative Clinical Practice University of Alabama at Birmingham, Birmingham, Alabama

Link dokumen ProQuest

ABSTRAK (ENGLISH)

Objective

Laboratory professionals must communicate effectively on an interprofessional team. It is the responsibility of Medical Laboratory Science (MLS) programs to teach communication. The structured communication tool Situation, Background, Assessment, and Recommendation (SBAR) is one way to promote effective communication.

Methods

Students participated in a case-based simulation activity on the importance of teamwork/communication and the use of SBAR and completed a pre/post survey on communicating interprofessionally.

Results

Students reported increased confidence and competence with interprofessional communication after the activity with 4 of 5 questions demonstrating a statistically significant increase in scores post SBAR instruction.

Conclusions

Our study demonstrates that SBAR is a suitable communication tool that can be used to increase our MLS students' confidence and competency in interprofessional communication. Educators should use this communication tool to empower MLS students to be effective members of the healthcare team.

DETAIL

Subjek:	Medical laboratories; Students; Communication
Pengidentifikasi/kata kunci:	SBAR; simulation; medical laboratory science; communication; interprofessional; teamwork; TeamSTEPPS
Judul:	SBAR as a Standardized Communication Tool for Medical Laboratory Science Students
Pengarang:	Oliveira, Ana L1; Brown, Michelle21 Department of Clinical and Diagnostic Sciences, School of Health Professions, University of Alabama at Birmingham, Birmingham, Alabama2 Department of Health Services Administration, School of Health Professions, University of Alabama at Birmingham, Birmingham, Alabama; Office of Interprofessional Simulation for Innovative Clinical Practice University of Alabama at Birmingham, Birmingham, Alabama
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Cell-Derived Microparticles in Blood Products from Thalassemic Blood Donors

Noulsri, Egarit [1] ; Lerdwana, Surada [2] ; Palasuwan, Duangdao [3] ; Palasuwan, Attakorn [3] [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 [3] Oxidation in Red Cell Disorders and Health Task Force, Department of Clinical Microscopy, Faculty of Allied Health Sciences, Chulalongkorn University, Bangkok, Thailand

Link dokumen ProQuest

ABSTRAK (ENGLISH)

Objective

To determine the number of cell-derived microparticles (MPs) in blood products obtained from donors who have

thalassemia.

Methods

Packed red blood cells (PRBCs), plasma, and platelet concentrate (PC) were prepared according to routine procedures. We used flow cytometry to quantitate the concentration of MPs.

Results

The results of a comparison of MP levels in unprocessed whole blood showed that the concentration of all MPs in the donors without thalassemia trait (n = 255) was higher than in donors with thalassemia trait (n = 70). After processing, increased concentrations of MPs were documented in both groups. Among the blood components, PRBC showed higher platelet-derived MP concentrations in donors with thalassemia than in donors without thalassemia. However, PC showed higher concentrations of total MPs in donors without thalassemia than in donors with that condition.

Conclusions

Our results suggest little influence of thalassemia-trait status on changes in MP concentrations in blood components.

DETAIL

Subjek:	Blood &organ donations; Blood products
Pengidentifikasi/kata kunci:	β-thalassemia; transfusion donor; microparticle; quantitation; flow cytometry; laboratory
Judul:	Cell-Derived Microparticles in Blood Products from Thalassemic Blood Donors
Pengarang:	Noulsri, Egarit1 ; Lerdwana, Surada2; Palasuwan, Duangdao3; Palasuwan, Attakorn31 Research Division, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand2 Biomedical Research Incubator Unit, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand3 Oxidation in Red Cell Disorders and Health Task Force, Department of Clinical Microscopy, Faculty of Allied Health Sciences, Chulalongkorn University, Bangkok, Thailand
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How Reliable Is Automated Urinalysis in Acute Kidney Injury?

Chandrashekar, Vani [1] ; Tarigopula, Anil [2] ; Prabhakar, Vikram [1] [1] Department of Hematology, Clinical pathology, Apollo hospitals, Chennai, India [2] Department of Centralised Molecular Diagnostics, Apollo Hospitals, Chennai, India

ABSTRAK (ENGLISH)

Objective

Examination of urine sediment is crucial in acute kidney injury (AKI). In such renal injury, tubular epithelial cells, epithelial cell casts, and dysmorphic red cells may provide clues to etiology. The aim of this study was to compare automated urinalysis findings with manual microscopic analysis in AKI.

Methods

Samples from patients diagnosed with AKI and control patients were included in the study. Red blood cells, white blood cells, renal tubular epithelial cells/small round cells, casts, and pathologic (path) cast counts obtained microscopically and by a UF1000i cytometer were compared by Spearman test. Logistic regression analysis was used to assess the ability to predict AKI from parameters obtained from the UF1000i.

Results

There was poor correlation between manual and automated analysis in AKI. None of the parameters could predict AKI using logistic regression analysis. However, the increment in the automated path cast count increased the odds of AKI 93 times.

Conclusion

Automated urinalysis parameters are poor predictors of AKI, and there is no agreement with manual microscopy.

DETAIL

Subjek:	Regression analysis; Automation; Kidneys; Urinalysis
Ketentuan indeks bisnis:	Subjek: Automation
Pengidentifikasi/kata kunci:	urinalysis; acute kidney injury; UF1000i; cast; pathological cast; urine microscopy
Judul:	How Reliable Is Automated Urinalysis in Acute Kidney Injury?
Pengarang:	Chandrashekar, Vani1 ; Tarigopula, Anil2; Prabhakar, Vikram11 Department of Hematology, Clinical pathology, Apollo hospitals, Chennai, India2 Department of Centralised Molecular Diagnostics, Apollo Hospitals, Chennai , India
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Corrigendum to: Comparison of Nucleic Acid Amplification and IgM Tests for the Diagnosis of Mycoplasma pneumonia e Infection in Children During a Recent Korean Outbreak

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Absolute Lymphocytes, Ferritin, C-Reactive Protein, and Lactate Dehydrogenase Predict Early Invasive Ventilation in Patients With COVID-19

Payán-Pernía, Salvador [1] ; Lucía Gómez Pérez [1] ; Remacha Sevilla, Ángel F [1] ; Jordi Sierra Gil [1] ; Silvana Novelli Canales [1] [1] Haematology Department, Hospital de la Santa Creu i Sant Pau, Sant Pau Research Institute, Universitat Autònoma de Barcelona, Barcelona, Spain

ABSTRAK (ENGLISH)

Objective

Early detection of patients with COVID-19 who will need mechanical invasive ventilation (MIV) may aid in delivering proper care and optimizing the use of limited resources.

Methods

In this single-center retrospective observational study, we aimed to identify simple laboratory parameters that in combination with ferritin (a surrogate marker of severe inflammation) may help predict early (first 48 hours) MIV. A total of 160 patients with COVID-19 in whom serum ferritin, absolute lymphocyte count (ALC), platelet count, C-reactive protein (CRP), and lactate dehydrogenase (LDH) had been analyzed at admission were included.

Results

We found that ferritin, LDH, ALC, and CRP predicted with 88% accuracy the probability of early MIV. Results indicated that LDH showed the greater area under the curve (AUC), with a value of 89.1%. Using the AUC, we established cutoff values for clinical application. Finally, we developed a classification tree based on LDH for its clinical use.

Conclusion

Ferritin, LDH, ALC, and CRP predict with 88% accuracy the probability of early MIV.

DETAIL

Subjek:	Coronaviruses; Dehydrogenases; Ventilation; COVID-19
Pengidentifikasi/kata kunci:	ferritin; COVID-19; hematology; biomarkers; mechanical ventilation; lactate dehydrogenase
Judul:	Absolute Lymphocytes, Ferritin, C-Reactive Protein, and Lactate Dehydrogenase Predict Early Invasive Ventilation in Patients With COVID-19
Pengarang:	Payán-Pernía, Salvador1 ; Lucía Gómez Pérez1; Remacha Sevilla, Ángel F1; Jordi Sierra Gil1; Silvana Novelli Canales11 Haematology Department, Hospital de la Santa Creu i Sant Pau, Sant Pau Research Institute, Universitat Autònoma de Barcelona, Barcelona, Spain
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Neurogranin as a Novel Biomarker in Alzheimer's Disease

Agnello, Luisa [1] ; Gambino, Caterina Maria [1] ; Bruna Lo Sasso [2] ; Bivona, Giulia [2] ; Milano, Salvatore [3] ; Ciaccio, Anna Maria [4] ; Piccoli, Tommaso [5] ; Vincenzo La Bella [5] ; Ciaccio, Marcello [2]

[1] Department of Biomedicine, Neurosciences and Advanced Diagnostics, Institute of Clinical Biochemistry, Clinical Molecular Medicine and Laboratory Medicine, University of Palermo, Palermo, Italy [2] Department of Biomedicine, Neurosciences and Advanced Diagnostics, Institute of Clinical Biochemistry, Clinical Molecular Medicine and Laboratory Medicine, University of Palermo, Palermo, Italy; Department of Laboratory Medicine, University Hospital "P. Giaccone," Palermo, Italy [3] Department of Laboratory Medicine, University Hospital "P. Giaccone," Palermo, Italy [4] University of Palermo, Palermo, Italy [5] Department of Biomedicine, Neurosciences and Advanced Diagnostics, Neurology Unit, University of Palermo, Palermo, Italy

ABSTRAK (ENGLISH)

Background

In this study, we investigated the possible role of 2 novel biomarkers of synaptic damage, namely, neurogranin and α-synuclein, in Alzheimer disease (AD).

Methods

The study was performed in a cohort consisting of patients with AD and those without AD, including individuals with other neurological diseases. Cerebrospinal fluid (CSF) neurogranin and α-synuclein levels were measured by sensitive enzyme-linked immunosorbent assays (ELISAs).

Results

We found significantly increased levels of CSF neurogranin and α-synuclein in patients with AD than those without AD. Neurogranin was correlated with total tau (tTau) and phosphorylated tau (pTau), as well as with cognitive decline, in patients with AD. Receiver operating characteristic (ROC) curve analysis showed good diagnostic accuracy of neurogranin for AD at a cutoff point of 306 pg per mL with an area under the curve (AUC) of 0.872 and sensitivity and specificity of 84.2% and 78%, respectively.

Conclusions

Our findings support the use of CSF neurogranin as a biomarker of synapsis damage in patients with AD.

DETAIL

Subjek:	Biomarkers; Alzheimers disease
Pengidentifikasi/kata kunci:	neurogranin; α-synuclein; CSF; synaptic loss; biomarker; synapsis
Judul:	Neurogranin as a Novel Biomarker in Alzheimer’s Disease
Pengarang:	Agnello, Luisa1; Gambino, Caterina Maria1; Bruna Lo Sasso2; Bivona, Giulia2; Milano, Salvatore3; Ciaccio, Anna Maria4; Piccoli, Tommaso5; Vincenzo La Bella5; Ciaccio, Marcello2 1 Department of Biomedicine, Neurosciences and Advanced Diagnostics, Institute of Clinical Biochemistry, Clinical Molecular Medicine and Laboratory Medicine, University of Palermo, Palermo, Italy2 Department of Biomedicine, Neurosciences and Advanced Diagnostics, Institute of Clinical Biochemistry, Clinical Molecular Medicine and Laboratory Medicine, University of Palermo, Palermo, Italy; Department of Laboratory Medicine, University Hospital “P. Giaccone,” Palermo, Italy3 Department of Laboratory Medicine, University Hospital “P. Giaccone,” Palermo, Italy4 University of Palermo, Palermo, I taly5 Department of Biomedicine, Neurosciences and Advanced Diagnostics, Neurology Unit, University of Palermo, Palermo, Italy

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Comparison of Nucleic Acid Amplification and IgM Tests for the Diagnosis of Mycoplasma pneumoniae Infection in Children During a Recent Korean

Outbreak

Hye-Young, Lee [1] ; Sul, Seunghwan [2] ; Jeong Young Lee [2] ; Mi-Na, Kim [2] ; Yu, Jinho [3] ; Sung, Heungsup [2 1] Department of Laboratory Medicine, University of Ulsan College of Medicine and Asan Medical Center, Seoul, Korea; Department of Laboratory Medicine, U2Bio Laboratories, Seoul, Republic of Korea [2] Department of Laboratory Medicine, University of Ulsan College of Medicine and Asan Medical Center, Seoul, Korea [3] Department of Pediatrics, University of Ulsan College of Medicine and Asan Medical Center, Seoul, Korea

ABSTRAK (ENGLISH)

Objective

In the absence of standardized methods for *Mycoplasma pneumoniae* detection, we evaluated the diagnostic value of polymerase chain reaction (PCR) and IgM assays for detecting *M. pneumoniae* infection in children during a recent Korean outbreak.

Methods

The diagnostic performances of PCR and IgM assays for *M. pneumoniae* in 1,109 clinical specimens were evaluated by the Japanese Respiratory Society (JRS) scoring system as an interim reference standard.

Results

The level of agreement between both tests was fair. As analyzed by the JRS scoring system, the sensitivity of PCR was 45.2% in the group aged <5 years, 86.8% in the group aged 5 years to 10 years group, and 72.2% in the group aged 10 years to 18 years; the sensitivity of the IgM assay was 66.8%, 71.4%, and 55.6% in each group, respectively.

Conclusion

The sensitivity of PCR is relatively low but is superior to that of IgM assays such that diagnostic performance can be improved by both test methods in patients aged <5 years.

DETAIL

Subjek:	Pneumonia; Antibiotics; Polymerase chain reaction; Blood; Test methods; Serology; Medical diagnosis; Immunoassay; Diagnostic tests; Bacteria
Pengidentifikasi/kata kunci:	Mycoplasma pneumoniae; polymerase chain reaction; anti- Mycoplasma pneumoniae IgM; outbreak; sensitivity; diagnostic performance
Judul:	Comparison of Nucleic Acid Amplification and IgM Tests for the Diagnosis of Mycoplasma pneumoniae Infection in Children During a Recent Korean Outbreak

Pengarang:	Hye-Young, Lee1; Sul, Seunghwan2; Jeong Young Lee2; Mi-Na, Kim2; Yu, Jinho3; Sung, Heungsup21 Department of Laboratory Medicine, University of Ulsan College of Medicine and Asan Medical Center, Seoul, Korea; Department of Laboratory Medicine, U2Bio Laboratories, Seoul, Republic of Korea2 Department of Laboratory Medicine, University of Ulsan College of Medicine and Asan Medical Center, Seoul, Korea3 Department of Pediatrics, University of Ulsan College of Medicine and Asan Medical Center, Seoul, Korea
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Basis data:	Public Health Database

Gonorrhea and Chlamydia Specimen Positivity Rate by Polymerase Chain Reaction at a Regional Veteran Affairs Medical Center

Petersen, Jeffrey M [1]
; Patel, Sahil [2] ; Dalal, Sharvari [1] ; Jhala, Darshana [1 1] Department of Pathology and Laboratory Medicine, Michael J. Crescenz Veteran Affairs Medical Center, Philadelphia, Pennsylvania; Department of Pathology and Laboratory Medicine, Philadelphia, Pennsylvania [2] Department of Pathology and Laboratory Medicine, Michael J. Crescenz Veteran Affairs Medical Center, Philadelphia, Pennsylvania

ABSTRAK (ENGLISH)

Objective

Sexually transmitted infections because of *Neisseria gonorrhoeae* (NG) and/or *Chlamydia trachomatis* (CT) remain a major public health problem. Although the literature describes the population-based epidemiology of CT/NG, it does not appear to contain reference points for the statistical analyses of specimen positivity rates by nucleic acid testing (NAT) with polymerase chain reaction (PCR) that would be collected by a laboratory following best laboratory and regulatory practice. For facilities that diagnose NG and CT by a real-time PCR assay, an understanding of the expected specimen positivity rate of gonorrhea and chlamydia would be helpful for monitoring the assay for quality assurance. Therefore, on behalf of the Michael J. Crescenz Veteran Affairs Medical Center (VAMC), we present this novel quality assurance study on its CT/NG specimen positivity rates conducted by NAT with PCR.

Methods

Quality assurance/improvement quarterly data from April 1, 2012 to September 30, 2019 were reviewed to obtain both the test volume of PCR for CT/NG and the number of positive test results at the VAMC to collate and perform statistical analyses. Testing had been performed using the Abbott m2000 RealTime System (Abbott Park, IL).

Results

A total of 22,709 PCR tests for CT/NG had been performed on the veteran population; of these, 502 tests were positive for NG and 744 were positive for CT. Quarterly percentage rates ranged from 1.67% to 5.30% for CT and from 1.00% to 3.25% for NG, with average rates of 3.35% and 2.22% for CT and NG, respectively.

Conclusion

The establishment of an expected rate of specimen positivity of CT/NG by NAT with PCR at the VAMC is a significant novel reference point in the quality assurance (QA) literature and provides a benchmark that aids tremendously in QA for the microbiology/molecular laboratory.

DETAIL

Subjek:	Laboratories; Gonorrhea; Polymerase chain reaction; Chlamydia; Quality control
Ketentuan indeks bisnis:	Subjek: Quality control
Pengidentifikasi/kata kunci:	polymerase chain reaction; molecular diagnostics; sexually transmitted diseases; quality assurance; quality improvement; regulatory compliance; reference statistics; quality; CAP Microbiology Checklist
Judul:	Gonorrhea and Chlamydia Specimen Positivity Rate by Polymerase Chain Reaction at a Regional Veteran Affairs Medical Center
Pengarang:	Petersen, Jeffrey M1 ; Patel, Sahil2; Dalal, Sharvari1; Jhala, Darshana11 Department of Pathology and Laboratory Medicine, Michael J. Crescenz Veteran Affairs Medical Center, Philadelphia, Pennsylvania; Department of Pathology and Laboratory Medicine, Philadelphia, Pennsylvania2 Department of Pathology and Laboratory Medicine, Michael J. Crescenz Veteran Affairs Medical Center, Philadelphia, Pennsylvania
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Criticality of In-House Preparation of Viral Transport Medium in Times of Shortage During COVID-19 Pandemic

Petersen, Jeffrey [1]
; Dalal, Sharvari [1] ; Jhala, Darshana [1] [1] Corporal Michael J. Crescenz Veteran Affairs Medical Center, Philadelphia, Pennsylvania; University of Pennsylvania, Philadelphia, Pennsylvania

ABSTRAK (ENGLISH)

Objective

With the COVID-19 pandemic, there have been supply challenges necessitating that laboratories must prepare their own viral transport medium (VTM), which provides stability for clinical specimens for diagnostic viral testing.

Methods

Within a veteran affairs medical center clinical laboratory, VTM was prepared with a Hanks Balanced Salt Solution (HBSS) 500 mL bottle with phenol red, sterile heat-inactivated fetal bovine serum (FBS), gentamicin sulfate (50 mg/mL), and amphotericin B (250 µg/mL). An antimicrobial mixture was made of 50 mL each of amphotericin B and gentamicin sulfate. Ten mL of FBS and 2 mL of the antimicrobial mixture were mixed into the HBSS bottle, from which 3 mL aliquots were made. Sterility and efficacy check were assessed. These preparations were conducted at our VAMC's clinical laboratory to assure adequate VTM supply during the COVID-19 shortage.

Results

The VTM was successfully prepared in-house, supporting uninterrupted testing for the facility and other affiliated medical facilities/centers and community living centers.

Conclusion

This quality assurance/improvement report represents the first published manuscript on feasible VTM preparation

exclusively within a clinical microbiology laboratory during the COVID-19 pandemic.

DETAIL

Subjek:	Medical laboratories; Coronaviruses; Pandemics; COVID-19; Quality control; Antifungal agents
Ketentuan indeks bisnis:	Subjek: Quality control
Pengidentifikasi/kata kunci:	viral transport media preparation; SARS-CoV-2; emergency preparedness; molecular pathology; COVID-19; quality control; quality assurance; supply shortage; clinical pathology; laboratory workflow
Judul:	Criticality of In-House Preparation of Viral Transport Medium in Times of Shortage During COVID-19 Pandemic
Pengarang:	Petersen, Jeffrey1 ; Dalal, Sharvari1; Jhala, Darshana11 Corporal Michael J. Crescenz Veteran Affairs Medical Center, Philadelphia, Pennsylvania; University of Pennsylvania, Philadelphia, Pennsylvania
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Variation in LOD Across SARS-CoV-2 Assay Systems: Need for Standardization

Sohni, Youvraj [1] [1] Science and Technology, LabCorp, Elon, North Carolina

ABSTRAK (ENGLISH)

Multiple SARS-CoV-2 emergency use authorization (EUA) tests are being used for clinical testing across various clinical testing laboratories for meeting the diagnostic challenges of the ongoing pandemic. However, cross-assay variations in performance characteristics need to be recognized. A better understanding is needed of the clinical implications of cross-assay variation in performance characteristics, particularly in the limit of detection (LOD) of the SARS-CoV-2 assays used for clinical testing. Herein, a snapshot of the diversity of SARS-CoV-2 EUA analytical assay systems including methodologies, assay designs, and technology platforms is presented. Factors affecting the variations in LOD are discussed. Potential measures that may standardize across the various assay systems are suggested. Development of international standards and reference materials for the establishment of performance characteristics may substantially alleviate potential clinical decision-making challenges. Finally, cross-assay variation in LODs among the diverse SARS-CoV-2 diagnostic assays impacts clinical decision-making with multiple assay systems in use and lack of standardization across platforms. International standards in parallel with continued cross-platform studies and collaborative efforts across pertinent healthcare entities will help mitigate some of the clinical decision-making challenges.

DETAIL

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The Utility of Elevated Serum Lactate Dehydrogenase in Current Clinical Practice

Krishnamurthy, Kritika [1]
; Medina, Ana Maria [2] ; Howard, Lydia [2 1] Arkadi M. Rywlin M.D. Department of Pathology and Laboratory Medicine, Mount Sinai Medical Center, Miami Beach, Florida [2] Arkadi M. Rywlin M.D. Department of Pathology and Laboratory Medicine, Mount Sinai Medical Center, Miami Beach, Florida; Florida International University, Herbert Wertheim College of Medicine, Miami, Florida

ABSTRAK (ENGLISH)

Objective

Because of its wide tissue distribution, elevation of serum lactate dehydrogenase (LD) is a nonspecific finding. Although serum LD is still included in the prognosis and staging of metastatic melanoma and germ cell tumors, its nonspecificity has led to decreased usefulness.

Methods

In this study, we analyzed the serum LD assays performed in a 726-bed hospital during a 1-year period and reviewed charts of patients with serum LD of >3 standard deviations (SD).

Results

Of 312 patients with elevated serum LD, only 9 were patients with melanoma and germ cell tumors. The other 303 patients had other malignancies, chronic conditions, and sepsis.

Conclusion

Elevated serum LD (even >3 SD) is an extremely nonspecific finding that does not contribute to clinical management in a majority of patients. As such, serum LD testing should be retired from routine clinical order sets and restricted in use.

DETAIL

Subjek:	Melanoma; Dehydrogenases
Pengidentifikasi/kata kunci:	lactate dehydrogenase; LD; serum LD; serum markers
Judul:	The Utility of Elevated Serum Lactate Dehydrogenase in Current Clinical Practice
Pengarang:	Krishnamurthy, Kritika1 ; Medina, Ana Maria2; Howard, Lydia21 Arkadi M. Rywlin M.D. Department of Pathology and Laboratory Medicine, Mount Sinai Medical Center, Miami Beach, Florida2 Arkadi M. Rywlin M.D. Department of Pathology and Laboratory Medicine, Mount Sinai Medical Center, Miami Beach, Florida; Florida International University, Herbert Wertheim College of Medicine, Miami, Florida
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Machine Learning Prediction of SARS-CoV-2 Polymerase Chain Reaction Results with Routine Blood Tests

Tschoellitsch, Thomas [1] ; Dünser, Martin [1] ; Böck, Carl [1] ; Schwarzbauer, Karin [2] ; Meier, Jens [1] 1 Department of

Anesthesiology and Critical Care Medicine, Kepler University Hospital GmbH and Johannes Kepler University, Faculty of Medicine, Linz, Austria [2] Institute for Machine Learning, Johannes Kepler University, Linz, Austria

ABSTRAK (ENGLISH)

Objective

The diagnosis of COVID-19 is based on the detection of SARS-CoV-2 in respiratory secretions, blood, or stool. Currently, reverse transcription polymerase chain reaction (RT-PCR) is the most commonly used method to test for SARS-CoV-2.

Methods

In this retrospective cohort analysis, we evaluated whether machine learning could exclude SARS-CoV-2 infection using routinely available laboratory values. A Random Forests algorithm with 28 unique features was trained to predict the RT-PCR results.

Results

Out of 12,848 patients undergoing SARS-CoV-2 testing, routine blood tests were simultaneously performed in 1357 patients. The machine learning model could predict SARS-CoV-2 test results with an accuracy of 86% and an area under the receiver operating characteristic curve of 0.74.

Conclusion

Machine learning methods can reliably predict a negative SARS-CoV-2 RT-PCR test result using standard blood tests.

DETAIL

Subjek:	Machine learning; Blood tests; Polymerase chain reaction; Severe acute respiratory syndrome coronavirus 2
Ketentuan indeks bisnis:	Subjek: Machine learning
Judul:	Machine Learning Prediction of SARS-CoV-2 Polymerase Chain Reaction Results with Routine Blood Tests
Pengarang:	Tschoellitsch, Thomas1 ; Dünser, Martin1; Böck, Carl1; Schwarzbauer, Karin2; Meier, Jens11 Department of Anesthesiology and Critical Care Medicine, Kepler University Hospital GmbH and Johannes Kepler University, Faculty of Medicine, Linz, Austria2 Institute for Machine Learning, Johannes Kepler University, Linz, Austria
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ABL Kinase Domain Mutations in Iranian Chronic Myeloid Leukemia Patients with Resistance to Tyrosine Kinase Inhibitors

Shojaei, Mahboobeh [1] ; Rezvani, Hamid [2] ; Azarkeivan, Azita [1] ; Poopak, Behzad [3 1] Iranian Blood Transfusion Organization, High Institute of Research and Education in Transfusion Medicine, Tehran, Iran

[2] Hematology and Oncology Center, Taleghani Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran [3] Department of Hematology, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, IR Iran

ABSTRAK (ENGLISH)

Objective

Tyrosine kinase inhibitors (TKIs) are considered standard first-line treatment in patients with chronic myeloid leukemia. Because ABL kinase domain mutations are the most common causes of treatment resistance, their prevalence and assessment during treatment may predict subsequent response to therapy.

Methods

The molecular response in *Bcr-Abl1*^{IS} was tested via quantitative real-time polymerase chain reaction. We used the direct sequencing technique to discover the mutations in the ABL kinase domain. The IRIS trial established a standard baseline for measurement – (100% BCR-ABL1 on the 'international scale') and a major molecular response (good response to therapy) was defined as a 3-log reduction in the amount of BCR-ABL1 – 0.1% BCR-ABL1 on the international scale.

Results

We observed 11 different mutations in 13 patients, including E255K, which had the highest mutation rate. A lack of hematologic response was found in 22 patients, who showed a significantly higher incidence of mutations.

Conclusion

Detection of kinase domain mutations is a reliable method for choosing the best treatment strategy based on patients' conditions, avoiding ineffective treatments, and running high-cost protocols in patients with acquired resistance to TKIs.

DETAIL

Subjek:	Leukemia; Kinases; Mutation
Pengidentifikasi/kata kunci:	chronic myeloid leukemia; mutation; TKI; sequencing
Judul:	ABL Kinase Domain Mutations in Iranian Chronic Myeloid Leukemia Patients with Resistance to Tyrosine Kinase Inhibitors
Pengarang:	Shojaei, Mahboobeh1; Rezvani, Hamid2; Azarkeivan, Azita1; Poopak, Behzad31 Iranian Blood Transfusion Organization, High Institute of Research and Education in Transfusion Medicine, Tehran, Iran2 Hematology and Oncology Center, Taleghani Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran3 Department of Hematology, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, IR Iran

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Reporting Sysmex XN Absolute Neutrophil Count in Samples with Leukocyte Analyzer Flagging

Anna-Maria Linko-Parvinen [1] ; Turkia, Heidi [1 1] Laboratory of Haematology, Tykslab, Laboratory Division, Turku University Hospital, Turku, Finland

ABSTRAK (ENGLISH)

Objective

To provide faster laboratory data reporting, we evaluated the accuracy of Sysmex XN (Sysmex Inc, Kobe, Japan) absolute neutrophil count (ANC) in the presence of analyzer flagging.

Methods

Sysmex XN and manual microscopy ANC were compared with 80 autovalidated control specimens and with 280 study specimens with analyzer flagging regarding immature granulocytes (IG) >3% or other leukocyte abnormalities. Specimens with ambiguous neutrophil clusters were excluded.

Results

A slight positive overall method bias was seen for Sysmex XN compared to manual microscopy (n = 280), 0.025 (95% confidence interval [CI], –0.023 to 0.069) × 109/L. With IG >10% (n = 123) the bias was larger, but not clinically significant, 0.17 (95% CI, 0.060–0.25) × 109/L. No clinically significant difference was seen in neutropenic (ANC <1.5 × 109/L) specimens (n = 91), 0.070 (95% CI, –0.013 to 0.14) × 109/L.

Conclusion

These data indicate that Sysmex XN ANC can be reported in the presence of certain analyzer flagging to improve patient care.

DETAIL

Subjek:	Neutrophils; Microscopy
Pengidentifikasi/kata kunci:	absolute neutrophil count; Sysmex XN; method comparison; hematology; immature granulocytes; analyzer flagging
Judul:	Reporting Sysmex XN Absolute Neutrophil Count in Samples with Leukocyte Analyzer Flagging
Pengarang:	Anna-Maria Linko-Parvinen1; Turkia, Heidi11 Laboratory of Haematology, Tykslab, Laboratory Division, Turku University Hospital, Turku, Finland
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Effect of Addition of WZB117 as an Inhibitor of Glucose Transporter 1 for Venous Blood Glucose Determination

Zhang, Lei [1] ; Yaqiong Ran [1] ; Zhu, Yan [1] ; Qianna Zhen [2] [1] Clinical Laboratory, the First Affiliated Hospital of Chongqing Medical University, Chongqing, China [2] Department of Endocrinology, the First Affiliated Hospital of Chongqing Medical University, Chongqing, China

Link dokumen ProQuest

ABSTRAK (ENGLISH)

Objective

Sodium fluoride (NaF) has been applied to inhibit glycolysis in venous specimens for decades. However, it has had little effect on the rate of glycolysis in the first 1 to 2 hours, resulting in a decrease of glucose, so a more efficient method is needed. Recently, we discovered that WZB117, a specific Glut1 inhibitor, restricts glycolysis by inhibiting the passive sugar transport of human red blood cells and cancer cells. The purpose of this study was to evaluate the results of intravenous blood glucose determination after the addition of WZB117.

Methods

Venous specimens from 40 pairs of healthy volunteers were collected for several days and placed in tubes containing NaF plus EDTA-disodium (Na2) without WZB117 (the A group); citric acid, trisodium citrate, and EDTA-Na2 without WZB117 (B group); and NaF plus EDTA-Na2 with WZB117 (C group). The glucose concentration was measured after venipuncture and compared with test tubes treated for 1 hour, 2 hours, and 3 hours before centrifugation. Glucose level was determined by the hexokinase method. The paired *t*-test was used to examine differences in glucose values at baseline and at different time points. The number of misdiagnoses and the misdiagnosis rate were calculated at 2 diagnostic stages: high risk of diabetes (glucose level of 6.1 mmol/L) and diagnosis of diabetes (glucose level of 7.0 mmol/L).

Results

Glucose levels decreased by 1.0% at 1 hour and by 2.1% at 3 hours in the C group tubes and simultaneously decreased by 1.7% at 1 hour and by 2.5% at 3 hours in the B group tubes. In contrast, glucose levels decreased by 4.1% at 1 hour and by 6.3% at 3 hours in the A group tubes. There was a statistically significant difference in glucose levels measured in the A group tubes and B group tubes at 1 hour, 2 hours, and 3 hours. The misdiagnosis rate of clinical diagnosis in diabetes was highest in the A group tubes (7.0‰ at 1 hour, 0.1‰ at 3 hours at 7.0 mmol/L point; 14.6‰ at 1 hour, 0.4‰ at 3 hours at 6.1 mmol/L point) and lowest in the C group tubes (2.95‰ at 1 hour, 0‰ at 3 hours at 7.0 mmol/L point; 4.8‰ at 1 hour, 0.1‰ at 3 hours at 6.1 mmol/L point).

Conclusion

The tube addition of WZB117 is more suitable for minimizing glycolysis and has no effect on glucose levels even if specimens are left uncentrifuged for up to 3 hours.

DETAIL

Subjek:	Glucose; Diabetes
Pengidentifikasi/kata kunci:	glucose concentration; WZB117; glycolysis; NaF; Glucose Transporter 1; misdiagnosis rate
Judul:	Effect of Addition of WZB117 as an Inhibitor of Glucose Transporter 1 for Venous Blood Glucose Determination

Pengarang:	Zhang, Lei1; Yaqiong Ran1; Zhu, Yan1; Qianna Zhen21 Clinical Laboratory, the First Affiliated Hospital of Chongqing Medical University, Chongqing, China2 Department of Endocrinology, the First Affiliated Hospital of Chongqing Medical University, Chongqing, China
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Associations of Serum Pepsinogens and Helicobacter Pylori Infection with High-Sensitivity C-Reactive Protein in Medical Examination Population

Liu, Huixing [1] ; Fei, Chunrong [1] ; Zhang, Jun [1 1] Clinical Laboratory, Sir Run Run Shaw Hospital, School of Medicine, Zhejiang University, Hangzhou, China

ABSTRAK (ENGLISH)

Objective

This study aimed to clarify the distribution characteristics of serum pepsinogen (PG) and *Helicobacter pylori* in the medical examination population and to explore the relationships of PG level and *H. pylori* infection status with the high-sensitivity C-reactive protein (hsCRP) level and their significance in health examination.

Methods

We detected *H. pylori* infection by C^{13} urea breath test, the serum pepsinogen I (PGI) and pepsinogen II (PGII) contents were measured by chemiluminescence microparticle immunoassay, and the PGI/PGII ratio was calculated. In addition, the serum hsCRP level was determined by the Abbott C16000 automatic biochemical analyzer.

Results

The PGI and hsCRP levels were significantly higher in men than in women, and the PGII level was slightly higher in men than in women (both $P < .05$). The PGI, PGII, and hsCRP levels were positively correlated with age ($r = 0.210$, 0.287, and 0.133, respectively; $P < .05$), whereas the PGI/PGII ratio was negatively correlated with age ($r = –0.190$; $P < .05$). The positive *H. pylori* infection rate was 30.2% among the patients in this study; *H. pylori* infection was not related to sex ($P > .05$), and the difference in age stratification was not statistically significant ($P > .05$). The abnormal PGI/PGII ratio in the medical examination population was not correlated with sex ($P > .05$). In the *H. pylori* positive infection group, the proportion of PGI/PGII ratio <3, the PGI and PGII levels were significantly higher than those in the *H. pylori* negative infection group, and the PGI/PGII ratio was significantly lower than that in the negative group (both $P < .05$). The hsCRP level was not associated with *H. pylori* infection ($P > .05$), and it was significantly higher in the PGI/PGII ratio <3 group than in the PGI/PGII ratio ≥3 group ($P < .05$).

Conclusion

The PGI and PGII levels and the PGI/PGII ratio are correlated with *H. pylori* infection. The abnormal PGI/PGII ratio is closely related to *H. pylori* infection and hsCRP level. Therefore, *H. pylori* infection status and hsCRP level should be considered when determining atrophic gastritis by the PGI/PGII ratio.

DETAIL

Subjek:	Infections; Physical examinations

Pengidentifikasi/kata kunci:	medical examination; Helicobacter pylori infection; high-sensitivity C-reactive protein; pepsinogen I; pepsinogen II; gastric cancer
Judul:	Associations of Serum Pepsinogens and Helicobacter Pylori Infection with High-Sensitivity C-Reactive Protein in Medical Examination Population
Pengarang:	Liu, Huixing1; Fei, Chunrong1; Zhang, Jun11 Clinical Laboratory, Sir Run Run Shaw Hospital, School of Medicine, Zhejiang University, Hangzhou, China
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Autophagy in Hematological Malignancies: Molecular Aspects in Leukemia and Lymphoma

Boustani, Hassan [1] ; Khodadi, Elahe [2] ; Shahidi, Minoo [1 1] Department of Hematology and Blood Banking, Faculty of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran [2] Thalassemia &Hemoglobinopathy Research Center, Health Research Institute, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

ABSTRAK (ENGLISH)

The organization of the hematopoietic system is dependent on hematopoietic stem cells (HSCs) that are capable of self-renewal and multilineage differentiation to produce different blood cell lines. Autophagy has a central role in energy production and metabolism of the cells during starvation, cellular stress adaption, and removing mechanisms for aged or damaged organelles.

The role and importance of autophagy pathways are becoming increasingly recognized in the literature because these pathways can be useful in organizing intracellular circulation, molecular complexes, and organelles to meet the needs of various hematopoietic cells. There is supporting evidence in the literature that autophagy plays an emerging role in the regulation of normal cells and that it also has important features in malignant hematopoiesis. Understanding the molecular details of the autophagy pathway can provide novel methods for more effective treatment of patients with leukemia. Overall, our review will emphasize the role of autophagy and its different aspects in hematological malignant neoplasms.

DETAIL

Subjek:	Autophagy; Leukemia; Hematology
Pengidentifikasi/kata kunci:	autophagy; hematological malignant neoplasms; hematopoiesis; molecular; leukemia; lymphoma
Judul:	Autophagy in Hematological Malignancies: Molecular Aspects in Leukemia and Lymphoma
Pengarang:	Boustani, Hassan1; Khodadi, Elahe2; Shahidi, Minoo11 Department of Hematology and Blood Banking, Faculty of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran2 Thalassemia &Hemoglobinopathy Research Center, Health Research Institute, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
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A Dozen Testosterone Samples From One Patient, on One Day?

Foley, Kevin F [1] [1] Department of Pathology, Kaiser Permanente Northwest, Portland, Oregon

Link dokumen ProQuest

ABSTRAK (ENGLISH)

The differential diagnosis of female virilization and infertility can be significantly narrowed using routine laboratory testing. The case presented herein is an example of a 28 year old Caucasian female patient with amenorrhea, hirsutism, and infertility in the context of markedly elevated serum testosterone levels. This case highlights the use of bilateral ovarian vein sampling for testosterone as a means to localize the ectopic testosterone production and to guide future surgical procedures. Adrenal vein sampling procedures are relatively more common than other methods. Ovarian vein sampling is less common, yet in this case, it proved diagnostic. This case demonstrates the needed cooperation of the clinical laboratory and the patient care team performing the catheterization, for this type of testing to be useful. In this unique case, we discovered bilateral production of androgens.

DETAIL

Subjek:	Laboratories; Ovaries; Testosterone; Infertility
Pengidentifikasi/kata kunci:	testosterone; tumor; ovarian; oophorectomy; sampling; cortisol
Judul:	A Dozen Testosterone Samples From One Patient, on One Day?
Pengarang:	Foley, Kevin F11 Department of Pathology, Kaiser Permanente Northwest, Portland, Oregon
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Thrombocytopenia Is Associated with COVID-19 Severity and Outcome: An Updated Meta-Analysis of 5637 Patients with Multiple Outcomes

Zong, Xiaolong [1]
; Gu, Yajun [2] ; Yu, Hongjian [3] ; Li, Zhenyu [4] ; Wang, Yuliang [5] [1] Department of Laboratory, The Second Hospital of Tianjin Medical University, Tianjin, China; Tianjin Key Laboratory of Ionic-Molecular Function of Cardiovascular Disease, Tianjin, China [2] School of Medical Laboratory, Tianjin Medical University, Tianjin, China [3] Department of Laboratory, Jinnan Hospital, Tianjin, China [4] Tianjin Key Laboratory of Ionic-Molecular Function of Cardiovascular Disease, Tianjin, China; Intensive Care Unit, The Second Hosptial of Tianjin Medical University, Tianjin, China [5] Department of Laboratory, The Second Hospital of Tianjin Medical University, Tianjin, China

ABSTRAK (ENGLISH)

The COVID-19 pandemic is persistent worldwide. A prior meta-analysis suggested the association of thrombocytopenia (TCP) with more severe COVID-19 illness and high mortality. Considering newly published studies, we updated the previous meta-analysis to confirm and explain the association of TCP with COVID-19 severity and multiple outcomes. Twenty-four studies with 5637 patients with COVID-19 were included in this study. The weighted incidence of TCP in COVID-19 was 12.4% (95% confidence interval [CI], 7.9%–17.7%). Data synthesis showed that the platelet number was lower in patients with either more severe illness or poor outcomes and even lower in nonsurvivors, with weighted mean differences of -24.56×10^9/L, -22.48×10^9/L, and -49.02×10^9/L, respectively. The meta-analysis of binary outcomes (with and without TCP) indicated the association between TCP and 3-fold enhanced risk of a composite outcome of intensive care unit admission, progression to acute respiratory distress syndrome, and mortality (odds ratio [OR], 3.49; 95% CI, 1.57–7.78). Subgroup analysis by endpoint events suggested TCP to be significantly associated with mortality (OR, 7.37; 95% CI, 2.08–26.14). Overall, the present comprehensive meta-analysis indicated that approximately 12% of hospitalized patients with COVID-19 have TCP, which also represents a sign of more severe illness and poor outcomes.

DETAIL

Subjek:	Thrombocytopenia; Coronaviruses; Mortality; Meta-analysis; COVID-19; Medical prognosis
Pengidentifikasi/kata kunci:	coronavirus disease 2019; COVID-19; SARS-CoV-2; platelet; thrombocytopenia; prognosis
Judul:	Thrombocytopenia Is Associated with COVID-19 Severity and Outcome: An Updated Meta-Analysis of 5637 Patients with Multiple Outcomes
Pengarang:	Zong, Xiaolong1 ; Gu, Yajun2; Yu, Hongjian3; Li, Zhenyu4; Wang, Yuliang51 Department of Laboratory, The Second Hospital of Tianjin Medical University, Tianjin, China; Tianjin Key Laboratory of Ionic-Molecular Function of Cardiovascular Disease, Tianjin, China2 School of Medical Laboratory, Tianjin Medical University, Tianjin, China3 Department of Laboratory, Jinnan Hospital, Tianjin, China4 Tianjin Key Laboratory of Ionic-Molecular Function of Cardiovascular Disease, Tianjin, China; Intensive Care Unit, The Second Hosptial of Tianjin Medical University, Tianjin, China5 Department of Laboratory, The Secon d Hospital of Tianjin Medical University, Tianjin, China
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Call for Action: Journals Need to Insist on Full Reporting of the Analytical Characteristics of Biomarkers

Zhao, Zhen [1] ; Sacks, David B [2] [1] Pathology and Laboratory Medicine, Weill Cornell Medicine, New York, New York [2] Department of Laboratory Medicine, National Institutes of Health, Bethesda, Maryland

DETAIL

Pengidentifikasi/kata kunci:	biomarker; analytical characteristics; guideline; reporting; reproducibility; transparency
Judul:	Call for Action: Journals Need to Insist on Full Reporting of the Analytical Characteristics of Biomarkers
Pengarang:	Zhao, Zhen1; Sacks, David B21 Pathology and Laboratory Medicine, Weill Cornell Medicine, New York, New York2 Department of Laboratory Medicine, National Institutes of Health, Bethesda, Maryland
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The Diagnostic Performance of lncRNAs from Blood Specimens in Patients with Hepatocellular Carcinoma: A Meta-Analysis

Jing-Yi, Huang [1] ; Si-Yu, Wang [2] ; Lin, Yong [2] ; Huo-Chun, Yi [2] ; Jian-Jun Niu [2] [1] Clinical Laboratory, Xiamen Branch of Zhongshan Hospital, Fudan University, Xiamen, Fujian Province, China [2] Center of Clinical Laboratory, Zhongshan Hospital, Xiamen University, Xiamen, Fujian Province, China

Link dokumen ProQuest

ABSTRAK (ENGLISH)

Objective

Long noncoding RNAs (lncRNAs) are widely involved in the carcinogenesis and development of cancers. We

conducted a meta-analysis to evaluate the diagnostic performance of lncRNAs in hepatocellular carcinoma (HCC).

Methods

After the inclusion and exclusion process, relevant information was extracted. Heterogeneity between studies was evaluated, and data synthesis was conducted by employing a bivariate random-effects model.

Results

In total, 20 eligible studies were enrolled. The pooled sensitivity and specificity were 0.86 (95% confidence interval [CI], 0.80–0.90) and 0.88 (95% CI, 0.82–0.92), respectively. The pooled positive likelihood ratio, pooled negative likelihood ratio, and pooled diagnostic odds ratio were 7.1 (95% CI, 4.9–10.2), 0.16 (95% CI, 0.11–0.23), and 44 (95% CI, 25–79), respectively. The results of the linear regression method and visual inspection of the Deeks funnel plot did not indicate significant publication bias.

Conclusion

Our meta-analysis suggested that lncRNAs have high diagnostic performance for HCC and have the potential for clinical application.

DETAIL

Subjek:	Liver cancer; Medical diagnosis
Pengidentifikasi/kata kunci:	long noncoding RNAs; hepatocellular carcinoma; diagnostic performance; meta-analysis; serum biomarkers; in vitro diagnosis
Judul:	The Diagnostic Performance of lncRNAs from Blood Specimens in Patients with Hepatocellular Carcinoma: A Meta-Analysis
Pengarang:	Jing-Yi, Huang1; Si-Yu, Wang2; Lin, Yong2; Huo-Chun, Yi2; Jian-Jun Niu21 Clinical Laboratory, Xiamen Branch of Zhongshan Hospital, Fudan University, Xiamen, Fujian Province, China2 Center of Clinical Laboratory, Zhongshan Hospital, Xiamen University, Xiamen, Fujian Province, China
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Mesenchymal Stem Cells in COVID-19: A Journey from Bench to Bedside

Sahu, Kamal Kant [1]
; Ahmad Daniyal Siddiqui [1] ; Cerny, Jan [2] [1] Department of Hematology and Oncology, Department of Internal Medicine, Saint Vincent Hospital, Worcester, Massachusetts [2] Division of Hematology and Oncology, Department of Medicine, UMass Memorial Health Care, University of Massachusetts Medical School, Worcester, Massachusetts

Link dokumen ProQuest

ABSTRAK (ENGLISH)

The COVID-19 pandemic has led to a major setback in both the health and economic sectors across the globe. The scale of the problem is enormous because we still do not have any specific anti-SARS-CoV-2 antiviral agent or vaccine. The human immune system has never been exposed to this novel virus, so the viral interactions with the human immune system are completely naive. New approaches are being studied at various levels, including animal in vitro models and human-based studies, to contain the COVID-19 pandemic as soon as possible. Many drugs are being tested for repurposing, but so far only remdesivir has shown some positive benefits based on preliminary

reports, but these results also need further confirmation via ongoing trials. Otherwise, no other agents have shown an impactful response against COVID-19. Recently, research exploring the therapeutic application of mesenchymal stem cells (MSCs) in critically ill patients suffering from COVID-19 has gained momentum. The patients belonging to this subset are most likely beyond the point where they could benefit from an antiviral therapy because most of their illness at this stage of disease is driven by inflammatory (over)response of the immune system. In this review, we discuss the potential of MSCs as a therapeutic option for patients with COVID-19, based on the encouraging results from the preliminary data showing improved outcomes in the progression of COVID-19 disease.

DETAIL

Subjek:	Severe acute respiratory syndrome coronavirus 2; Coronaviruses; Stem cells; Immune system; Pandemics; COVID-19
Pengidentifikasi/kata kunci:	Stem cells; COVID-19; SARS-CoV-2 Virus; pandemic; vaccine; clinical trials
Judul:	Mesenchymal Stem Cells in COVID-19: A Journey from Bench to Bedside
Pengarang:	Sahu, Kamal Kant1 ; Ahmad Daniyal Siddiqui1; Cerny, Jan21 Department of Hematology and Oncology, Department of Internal Medicine, Saint Vincent Hospital, Worcester, Massachusetts2 Division of Hematology and Oncology, Department of Medicine, UMass Memorial Health Care, University of Massachusetts Medical School, Worcester, Massachusetts
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A Rare Cohort of Two Rh $_{null}$ Individuals

Gammon, Richard R [1] ; Delk, Alexander [2] ; Houtz, Patricia [3] ; Alvarez, Harold [4] ; Benitez, Nancy [1] [1] Immunohematology Reference Laboratory-Cypress Creek, OneBlood, Inc., Ft. Lauderdale, Florida [2] Scientific Medical and Technical Administration, OneBlood, Inc., Orlando, Florida [3] Jupiter, Florida [4] Miami Cancer Institute, Miami, Florida

Link dokumen ProQuest

ABSTRAK (ENGLISH)

Objective

A 77 year old female was admitted with a subdural hematoma requiring 1 unit of apheresis platelets. She was a study subject in the 1960s and was found to be Rh$_{null}$, along with another individual who previously served as a directed donor for her.

Methods

Serologic testing performed by the immunohematology reference laboratory (IRL) confirmed that the patient was Rh$_{null}$ and expressed anti-Rh29 antibodies. While searching for red blood cells (RBCs) for possible transfusion, it was discovered that the individual from the original study had recently donated an autologous unit.

Results

The IRL discovered that the donor's antigen typing was r'r'. Testing had been performed using a molecular human erythrocyte antigen BeadChip (HBC). Due to the discrepancy between current and historical testing results, a donor segment was thawed and by tube testing confirmed to be Rh$_{null}$. A limitation of HBC is that many null phenotypes will be missed.

Conclusion

This case demonstrated that Rh_{null} evaluation of the donor required both serological and molecular methods.

DETAIL

Subjek:	Antigens; Erythrocytes
Pengidentifikasi/kata kunci:	antibodies to high prevalence antigens; high prevalence; Rh blood group system; null types; complex antibody identification; platelet transfusion; antigen testing; antigen testing by DNA; RHAG
Judul:	A Rare Cohort of Two Rhnull Individuals
Pengarang:	Gammon, Richard R1; Delk, Alexander2; Houtz, Patricia3; Alvarez, Harold4; Benitez, Nancy11 Immunohematology Reference Laboratory-Cypress Creek, OneBlood, Inc., Ft. Lauderdale, Florida2 Scientific Medical and Technical Administration, OneBlood, Inc., Orlando, Florida3 Jupiter, Florida4 Miami Cancer Institute, Miami, Florida
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Laboratory Management and Quality Control Practice of SARS-CoV-2 Nucleic Acid Detection

Xiao, Shiwei [1] ; Yue, Junqiu [1] ; Zhang, Tianming [1] ; Wang, Mingwei [1] ; Su, Jin [1] ; Zhang, Junfei [1] ; Zhang, Sheng [1] ; Xu, Pengfei [1] ; Wu, De [1] ; Hu, Jianhua [2] ; Guo, Fang [1] [1] Department of Pathology, Hubei Cancer Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China [2] Department of Clinical Laboratory, Hubei Cancer Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China

ABSTRAK (ENGLISH)

Objective

A positive result of SARS-CoV-2 nucleic acid detection provides critical laboratory evidence for clinical confirmed diagnosis, pandemic status evaluation, a pandemic prevention plan, treatment of infected people with symptoms, and protection of uninfected people. This study aims to provide a practical reference for SARS-CoV-2 nucleic acid–related research and detection.

Methods

Our laboratory has established policies combining personnel management and quality control practices for SARS-CoV-2 nucleic acid detection during the pandemic.

Results

In this article, we describe cross-department personnel management and key points of personal protection and quality control in the testing process. We also report on the differences in detection and the compatibility between different brand kits.

Conclusion

It is critical to maintain a standard and accurate laboratory operation for nucleic acid testing.

DETAIL

Subjek:	Laboratories; Acids; Severe acute respiratory syndrome coronavirus 2; Pandemics; Quality control
Ketentuan indeks bisnis:	Subjek: Quality control
Pengidentifikasi/kata kunci:	SARS-CoV-2; nucleic acid detection; laboratory management; quality control; suspicious cases; external quality assurance
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Pengarang:	Xiao, Shiwei1 ; Yue, Junqiu1; Zhang, Tianming1; Wang, Mingwei1; Su, Jin1; Zh ang, Junfei1; Zhang, Sheng1; Xu, Pengfei1; Wu, De1; Hu, Jianhua2; Guo, Fang11 Department of Pathology, Hubei Cancer Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China2 Department of Clinical Laboratory, Hubei Cancer Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China
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Clinical Value of Detecting Anti-Mutated Citrullinated Vimentin, Anti-Cyclic Citrullinated Peptide, Red Cell Distribution Width and 25-Hydroxyvitamin D in the Diagnosis of Rheumatoid Arthritis

Tan, Liming [1] ; Gong, Yangyang [2] ; Zhang, Qian [2] ; Zhang, Haocheng [2] ; Lu, Xiaoxia [2] ; Huang, Huijin [3]
[1] Department of Clinical Laboratory, the Second Affiliated Hospital of Nanchang University, Jiangxi Province Key Laboratory of Laboratory Medicine [2] School of Public Health, Nanchang University, Nanchang, China [3] Jiangxi Province JiuJiang Maternal and Child Health Care Center, JiuJiang, China

ABSTRAK (ENGLISH)

Objectives

To investigate the clinical value of detecting anti–mutated citrullinated vimentin (anti-MCV), anti-citrullinated peptide (anti-CCP), red-blood-cell distribution width (RDW), and 25-hydroxyvitamin D (25-[OH]D) in the diagnosis of rheumatoid arthritis (RA).

Methods

We enrolled 119 patients with RA, 114 control individuals without RA (*disease controls*), and 40 healthy controls in our study (Han Chinese). Anti-CCP and anti-MCV were detected by enzyme-linked immunosorbent assay (ELISA), 25-(OH)D was detected by electrochemical luminescence, and RDW was calculated by erythrocyte parameters detected via the electric resistance method.

Results

The serum levels of anti-CCP and anti-MCV in RA were higher than those in disease controls and healthy controls (P <.01). The areas under the curve (AUCs) of anti-MCV, anti-CCP, RDW, and 25-(OH)D were 0.857, 0.890, 0.611, and 0.569 respectively (P <.05). In various combinations of indicators, when RDW, 25-(OH)D, and anti-CCP; or

RDW, 25-(OH)D, anti-CCP, and anti-MCV were connected in parallel, the sensitivity was the highest (all 94.1%). Also, when RDW, 25-(OH)D, anti-CCP, and anti-MCV were connected in series, the sensitivity was the lowest (13.4%).

Conclusions

Anti-CCP and anti-MCV are ideal indices for RA diagnosis. Also, in combination with RDW and 25-(OH)D, the diagnostic level will be improved, as well as the sensitivity and specificity, which is significant for the differential diagnosis of RA.

DETAIL

Subjek:	Peptides; Rheumatoid arthritis; Medical diagnosis
Pengidentifikasi/kata kunci:	rheumatoid arthritis; anti-mutated citrullinated vimentin; anti–cyclic citrullinated peptide; 25-hydroxyvitamin D; red-blood-cell distribution width; diagnosis
Judul:	Clinical Value of Detecting Anti-Mutated Citrullinated Vimentin, Anti-Cyclic Citrullinated Peptide, Red Cell Distribution Width and 25-Hydroxyvitamin D in the Diagnosis of Rheumatoid Arthritis
Pengarang:	Tan, Liming1; Gong, Yangyang2; Zhang, Qian2; Zhang, Haocheng2; Lu, Xiaoxia2; Huang, Huijin31 Department of Clinical Laboratory, the Second Affiliated Hospital of Nanchang University, Jiangxi Province Key Laboratory of Laboratory Medicine2 School of Public Health, Nanchang University, Nanchang, China3 Jiangxi Province JiuJiang Maternal and Child Health Care Center, JiuJiang, China
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Urine S-Adenosylmethionine are Related to Degree of Renal Insufficiency in Patients with Chronic Kidney Disease

Kruglova, Maria Petrovna [1] ; Ivanov, Alexander Vladimirovich [2] ; Virus, Edward Danielevich [2] ; Bulgakova, Polina Olegovna [2] ; Samokhin, Andrey Segeevich [2] ; Fedoseev, Anatolij Nikolaevich [3] ; Sergej Vital'evich Grachev [1] ; Aslan, Amirkhanovich Kubatiev [4] [1] I.M. Sechenov First Moscow State Medical University (Sechenov University), Moscow, Russia [2] Department of Molecular and Cell Pathophysiology, Institute of General Pathology and Pathophysiology, Moscow, Russia [3] City Clinical Hospital No. 24 of Moscow Healthcare Department, Moscow, Russia [4] Department of Molecular and Cell Pathophysiology, Institute of General Pathology and Pathophysiology, Moscow, Russia; Russian Medical Academy of Postdoctoral Education, Moscow, Russia

ABSTRAK (ENGLISH)

Objective

To determine whether urine S-adenosylmethionine (SAM) might be an indicator of chronic kidney disease (CKD).

Methods

We investigated urine levels of SAM and related metabolites (S-adenosylhomocysteine and homocysteine cysteine) in 62 patients (average age, 65.9 years) with CKD (stages II–V).

Results

Patients with stages III–V CKD stages have significantly decreased urine levels and SAM/S-adenosylhomocysteine ratio and also cysteine/homocysteine ratio in blood plasma (P <.05), compared with patients with stage II CKD. Urine SAM levels allowed us to distinguish patients with mildly decreased kidney function from those with moderate to severe renal impairment (AUC, 0.791; sensitivity, 85%; specificity, 78.6%).

Conclusions

Our study results demonstrate that urine SAM is a potent biomarker for monitoring renal function decline at early CKD stages. Urine SAM testing confers an additional advantage to healthcare professionals in that it is noninvasive.

DETAIL

Subjek:	Urine; Homocysteine; Kidney diseases
Pengidentifikasi/kata kunci:	chronic kidney disease; cysteine; homocysteine; S-adenosylhomocysteine; S-adenosylmethionine; urine
Judul:	Urine S-Adenosylmethionine are Related to Degree of Renal Insufficiency in Patients with Chronic Kidney Disease
Pengarang:	Kruglova, Maria Petrovna1; Ivanov, Alexander Vladimirovich2; Virus, Edward Danielevich2; Bulgakova, Polina Olegovna2; Samokhin, Andrey Segeevich2; Fedoseev, Anatolij Nikolaevich3; Sergej Vital'evich Grachev1; Aslan, Amirkhanovich Kubatiev41 I.M. Sechenov First Moscow State Medical University (Sechenov University), Moscow, Russia2 Department of Molecular and Cell Pathophysiology, Institute of General Pathology and Pathophysiology, Moscow, Russia3 City Clinical Hospital No. 24 of Moscow Healthcare Department, Moscow, Russia4 Department of Molecular and Cell Pathophysiology, Institute of General Pathology and Pathophysiology, Moscow, Russia; Russian Medical Academy of Postdoctoral Education, Moscow, Russia
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Reviewer List

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Basis data:	Public Health Database

Assessment of Medical Laboratory Undergraduates Training in Different School Year Systems

Lu, Yajun [1] ; Xia, Qianfeng [1] ; Yang, Jun [1] [1] Key Laboratory of Tropical Translational Medicine, Ministry of Education, and School of Tropical Medicine and Laboratory Medicine, Hainan Medical University, Haikou, China

Link dokumen ProQuest

ABSTRAK (ENGLISH)

Objective

To assess the effect of the change from the 5-year system of coursework to a 4-year system on the achievements of

medical laboratory undergraduates.

Methods

We analyzed and then compared the topics of training and the test scores among all subject individuals in the 5-year vs the 4-year undergraduate program.

Results

Five-year-program undergraduates and 4-year-program undergraduates were required to complete 50 courses. The average weekly education time in the 4-year program (27.05 lesson-hours/week) was greater than that in the 5-year program (22.99 lesson-hours/week). The proportion of clinical practice in the hospital setting in the 4-year program (26.8%) was higher than that in the 5-year program (24.5%). The average, excellent, and good scores among 4-year-program undergraduates in general education courses, professional basic courses, professional courses, all courses, and common courses were lower than those scores among the 5-year-program undergraduates.

Conclusions

The 5-year undergraduate program should be adapted to help boost the achievements and practical skills among its students, in helping them adapt quickly to the new, 4-year training plan (which presented a serious challenge in our cohort).

DETAIL

Subjek:	College students; Medical laboratories
Pengidentifikasi/kata kunci:	achievements; 5-year system; 4-year system; medical laboratory; medical education
Judul:	Assessment of Medical Laboratory Undergraduates Training in Different School Year Systems
Pengarang:	Lu, Yajun1 ; Xia, Qianfeng1; Yang, Jun11 Key Laboratory of Tropical Translational Medicine, Ministry of Education, and School of Tropical Medicine and Laboratory Medicine, Hainan Medical University, Haikou, China
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Hak cipta:	© American Society for Clinical Pathology 2020. All rights reserved. For permissions, please e-mail: journals.permissions@oup.com
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Basis data:	Public Health Database

Transfusion Requirements and Blood Bank Support in Heart and Lung Transplantation

Dong-Won, Yoo [1] ; Hyun-Ji, Lee [1] ; Oh, Seung-Hwan [1] ; In Suk Kim [1] ; Hyung-Hoi, Kim [2] ; Je, Hyung Gon [3] ; Kim, Dohyung [3] ; Cho, Woo Hyun [4] ; Jeong Su Kim [5] ; Soo Yong Lee [5] ; Yeo, Hye Ju [4] [1] Department of Laboratory Medicine and Biomedical Research Institute, Pusan National University Yangsan Hospital, Yangsan, Korea [2] Department of Laboratory Medicine, Pusan National University Hospital, Pusan, Korea [3] Department of Cardiovascular and Thoracic Surgery, Research Institute for Convergence of Biomedical Science and Technology, Yangsan, Korea [4] Department of Pulmonology and Critical Care Medicine, Pusan National University Yangsan Hospital, Yangsan, Korea [5] Division of Cardiology, Department of Internal Medicine and Research Institute for Convergence of Biomedical Science and Technology, Pusan National University Yangsan Hospital, Pusan National University School of Medicine, Yangsan, Korea

Link dokumen ProQuest

ABSTRAK (ENGLISH)

Objective

Transplantations may require massive transfusion of blood products. Therefore, blood banks need to predict, prepare, and supply the required amount of blood products.

Methods

We measured the volume of transfused blood components as red blood cells, fresh frozen plasma, platelets, and cryoprecipitate in 54 and 89 patients who received heart and lung transplantation, respectively, in our hospital between January 2012 and December 2019.

Results

Platelets were the most frequently transfused blood component. Transfusion volumes during heart and lung transplantation surgeries differed: red blood cells, 7.83 units vs 14.84 units; fresh frozen plasma, 2.67 units vs 12.29 units; platelets, 13.13 units vs 23.63 units; and cryoprecipitate, 1.74 units vs 2.57 units; respectively. The average transfusion volume of transplants was different each year.

Conclusion

Periodic evaluation of transfusion requirements will facilitate the efficient management of blood products at the time of transplantation and help blood banks predict changes in blood requirements.

DETAIL

Subjek:	Blood platelets; Transplants &implants; Blood products; Blood banks
Pengidentifikasi/kata kunci:	solid organ transplantation; transfusion; intraoperative; surgical blood ordering schedule; massive blood transfusion; blood bank
Judul:	Transfusion Requirements and Blood Bank Support in Heart and Lung Transplantation
Pengarang:	Dong-Won, Yoo1 ; Hyun-Ji, Lee1; Oh, Seung-Hwan1; In Suk Kim1; Hyung-Hoi, Kim2; Je, Hyung Gon3; Kim, Dohyung3; Cho, Woo Hyun4; Jeong Su Kim5; Soo Yong Lee5 ; Yeo, Hye Ju41 Department of Laboratory Medicine and Biomedical Research Institute, Pusan National University Yangsan Hospital, Yan gsan, Korea2 Department of Laboratory Medicine, Pusan National University Hospital, Pusan, Korea3 Department of Cardiovascular and Thoracic Surgery, Research Institute for Convergence of Biomedical Science and Technology, Yangsan, Korea4 Department of Pulmonology and Critical Care Medicine, Pusan National University Yangsan Hospital, Yangsan, Korea5 Division of Cardiology, Department of Internal Medicine and Research Institute for Convergence of Biomedical Science and Technology, Pusan National University Yangsan Hospital, Pusan National University School of Medicine, Yangsan, Korea
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Basis data:	Public Health Database

Quantitative Assessment of the Effects of IL-1ß -511 C>T Variant on Breast Cancer Risk: An Updated Meta-Analysis of 3331 Cases and 3609 Controls

Harati-Sadegh, Mahdiyeh [1] ; Mohammadoo-Khorasani, Milad [2] ; Sargazi, Saman [3] ; Saravani, Ramin [4] ; Shahraki, Sheida [3] ; Eskandari, Ebrahim [5 1] Genetics of Non-Communicable Disease Research Center, Zahedan University of Medical Sciences, Zahedan, Iran [2] Department of Clinical Biochemistry, School of Medicine, Gonabad University of Medical Sciences, Gonabad, Iran [3] Cellular and Molecular Research Center, Resistant Tuberculosis Institute [4] Cellular and Molecular Research Center, Resistant Tuberculosis Institute; Department of Clinical Biochemistry, School of Medicine, Zahedan University of Medical Sciences, Zahedan, Iran [5] Department of Medical Genetics, University of British Columbia, Vancouver, British Columbia, Canada

ABSTRAK (ENGLISH)

Objective

Growing evidence suggests that *IL-1β* -511C>T, as a functional variant, affects the risk of developing breast cancer (BC); however, the results have not been conclusive. This meta-analysis was conducted to estimate the link between this variant and BC risk.

Methods

We retrieved available publications on *IL-1β* -511C>T polymorphism by conducting a comprehensive literature search on the Web of Science, MEDLINE, PubMed, Scopus, and Google scholar databases (last search on February 25, 2020).

Results

The overall analysis indicates that *IL-1β* -511C>T polymorphism conferred an increased risk of BC under a recessive TT vs CT+CC model by 1.14-fold and showed protection against BC under an overdominant CT vs TT+CC genetic contrast model (odds ratio = 0.84). Stratified analysis based on ethnicity revealed the protective effect of this single-nucleotide polymorphism against BC risk in Caucasian patients.

Conclusion

Our data results provide a proof of concept for the association of *IL-1β* -511C>T with BC risk. Larger, well-designed population-based studies are needed to confirm these findings.

DETAIL

Subjek:	Breast cancer; Polymorphism
Pengidentifikasi/kata kunci:	breast cancer; IL-1β; meta-analysis; polymorphism
Judul:	Quantitative Assessment of the Effects of IL-1ß -511 C > T Variant on Breast Cancer Risk: An Updated Meta-Analysis of 3331 Cases and 3609 Controls

Pengarang:	Harati-Sadegh, Mahdiyeh1; Mohammadoo-Khorasani, Milad2; Sargazi, Saman3 ; Saravani, Ramin4; Shahraki, Sheida3; Eskandari, Ebrahim51 Genetics of Non-Communicable Disease Research Center, Zahedan University of Medical Sciences, Zahedan, Iran2 Department of Clinical Biochemistry, School of Medicine, Gonabad University of Medical Sciences, Gonabad, Iran3 Cellular and Molecular Research Center, Resistant Tuberculosis Institute4 Cellular and Molecular Research Center, Resistant Tuberculosis Institute; Department of Clinical Biochemistry, School of Medicine, Zahedan University of Medical Sciences, Zahedan, Iran5 Department of Medical Genetics, University of British Columbia, Vancouver, British Columbia, Canada
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Terakhir diperbarui:	2022-09-05

Impact of Pool Testing in Detection of Asymptomatic Patients with COVID-19

Smalley, David L [1] ; Cisarik, Patricia M [1] ; Grantham, James [2] ; Cloud, William [2] ; R Brock Neil [1] ; DePriest, Paul [2 1] American Esoteric Laboratories, Memphis, Tennessee [2] Baptist Memorial Healthcare Corporation, Memphis, Tennessee

ABSTRAK (ENGLISH)

Objective

During the current pandemic, COVID-19 has been detected in patients using real-time reverse transcriptase-polymerase chain reaction (RT-PCR) that confirms the presence of SARS-CoV-2 RNA. The demand for increased testing, particularly for asymptomatic individuals required alternative approaches to single-patient RT-PCR testing, such as pooling.

Methods

This study explored the impact of dilution on the detectability of SARS-CoV-2 in asymptomatic patients using RT-PCR and demonstrated that pooling can be effective in low prevalence populations.

Results

The RT-PCR results for the 3:1, 5:1, and 7:1 aliquot samples showed little differences in CT values, confirming detection capability at these dilutions.

Conclusion

Based on the results of the present study, a pooled approach with up to 5:1 sample aliquots and using the current RT-PCR methodology likely will detect SARS CoV2 RNA among asymptomatic patients.

DETAIL

Subjek:	Severe acute respiratory syndrome coronavirus 2; Asymptomatic; Coronaviruses; COVID-19
Pengidentifikasi/kata kunci:	COVID-19; PCR; pooling; RT-PCR; asymptomatic; pandemic
Judul:	Impact of Pool Testing in Detection of Asymptomatic Patients with COVID-19

Pengarang:	Smalley, David L1; Cisarik, Patricia M1; Grantham, James2; Cloud, William2; R Brock Neil1; DePriest, Paul21 American Esoteric Laboratories, Memphis, Tennessee2 Baptist Memorial Healthcare Corporation, Memphis, Tennessee
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Basis data:	Public Health Database

The Association Between Serum Leptin Levels and Cardiovascular Events in Patients with Rheumatoid Arthritis

Chen, Jiliang [1] ; Xie, Zhiping [2] ; Zou Bin [1] [1] Department of Orthopedics, The Affiliated Mindong Hospital of Fujian Medical University, Ningdei, Fu Jian, People's Republic of China [2] Department of Neurosurgery, The First Affiliated Hospital of Nanchang University, Nanchang Jiangxi, People's Republic of China

ABSTRAK (ENGLISH)

Objective

Cardiovascular diseases (CVDs) are important complications for patients with rheumatoid arthritis (RA). The study aimed to explore whether serum leptin is associated with a increased risk of cardiovascular (CV) events in patients with RA.

Methods

Two hundred twenty-three patients with RA were followed for a mean of 40 (range = 8-42) months. Serum leptin levels were measured at baseline. Cox regression analysis was performed to assess the association between leptin levels and the risk of CV events.

Results

The univariate analysis showed that patients with RA with higher serum leptin levels had higher rates of CV events and CV mortality, respectively (P <.001). The logistic regression model showed that leptin was independently related to CVD history (odds ratio = 1.603, 95% confidence interval [CI], 1.329–2.195; P =.005) after adjusting for confounding factors in patients with RA at baseline. The multivariate Cox proportional hazard model suggested that leptin was an independent prognostic factor for CV events in patients with RA after adjustments were made for clinical confounding factors (hazard ratio = 2.467, 95% CI, 2.019–4.495; P <.001). The Kaplan-Meier analysis showed that compared with patients with RA with leptin levels below the median value (≤15.4 mg/L), patients with leptin above the median value (>15.4 μg/L) had a higher rate of CV events (P <.001).

Conclusion

Leptin was significantly associated with CV events in patients with RA. Elevated serum leptin levels may be a reliable prognostic factor for predicting CV complications in patients with RA.

DETAIL

Subjek:	Rheumatoid arthritis; Medical prognosis
Pengidentifikasi/kata kunci:	leptin; rheumatoid arthritis; cardiovascular event; prognostic value

Judul:	The Association Between Serum Leptin Levels and Cardiovascular Events in Patients with Rheumatoid Arthritis
Pengarang:	Chen, Jiliang1; Xie, Zhiping2; Zou Bin11 Department of Orthopedics, The Affiliated Mindong Hospital of Fujian Medical University, Ningdei, Fu Jian, People's Republic of China2 Department of Neurosurgery, The First Affiliated Hospital of Nanchang University, Nanchang Jiangxi, People's Republic of China
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Terakhir diperbarui:	2023-05-15
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Daftar Pustaka

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Kim, H., Hyung-Hoi, K., Chang, C. L., Song, S. H., & Kim, N. (2021). Novel PKD1 mutations in patients with autosomal dominant polycystic kidney disease. Labmedicine, 52(2), 174-180. doi:https://doi.org/10.1093/labmed/lmaa047

Objective Autosomal dominant polycystic kidney disease (ADPKD) is the most common genetic kidney disease. Identifying mutated causative genes can provide diagnostic and prognostic information. In this study, we describe the clinical application of a next generation sequencing (NGS)-based, targeted multi-gene panel test for the genetic diagnosis of patients with ADPKD. Methods We applied genetic analysis on 26 unrelated known or suspected patients with ADPKD. A total of 10 genes related to cystic change of kidney were targeted. Detected variants were classified according to standard guidelines. Results We identified 19 variants (detection rate: 73.1%), including PKD1 (n = 18) and PKD2 (n = 1). Of the 18 PKD1 variants, 8 were novel. Conclusion Multigene panel test can be a comprehensive tool in a clinical setting for genetic diagnosis of ADPKD. It allows us to identify clinically significant novel variants and confirm the diagnosis, and these objectives are difficult to achieve using conventional diagnostic tools.

Zhang, W., Liu, K., Zhang, P., Cheng, W., Li, L., Zhang, F., . . . Zhang, X. (2021). CRISPR-based approaches for efficient and accurate detection of SARS-CoV-2. Labmedicine, 52(2), 116-121. doi:https://doi.org/10.1093/labmed/lmaa101

An outbreak of COVID-19, caused by infection with SARS-CoV-2 in Wuhan, China in December 2019, spread throughout the country and around the world, quickly. The primary detection technique for SARS-CoV-2, the reverse-transcription polymerase chain reaction (RT-PCR)–based approach, requires expensive reagents and equipment and skilled personnel. In addition, for SARS-CoV-2 detection, specimens are usually shipped to a designated laboratory for testing, which may extend the diagnosis and treatment time of patients with COVID-19. The latest research shows that clustered regularly interspaced short palindromic repeats (CRISPR)–based approaches can quickly provide visual, rapid, ultrasensitive, and specific detection of SARS-CoV-2 at isothermal conditions. Therefore, CRISPR-based approaches are expected to be developed as attractive alternatives to conventional RT-PCR methods for the efficient and accurate detection of SARS-CoV-2. Recent advances in the field of CRISPR-based biosensing technologies for SARS-CoV-2 detection and insights into their potential use in many applications are reviewed in this article.

Noulsri, E. (2021). Effects of cell-derived microparticles on immune cells and potential implications in clinical medicine. Labmedicine, 52(2), 122-135. doi:https://doi.org/10.1093/labmed/lmaa043

In the past few years, interest has increased in cell-derived microparticles (MPs), which are defined by their size of from 0.1 to 1 μm, and can be derived from various cell types, including endothelial cells, leukocytes, red blood cells (RBCs), and platelets. These MPs carry negatively charged phosphatidylserine (PS) on their surfaces and proteins packaged from numerous cellular components. MPs that have been shed by the body can play important roles in the pathophysiology of diseases and can affect various biological systems. Among these systems, the immune components have been shown to be modulated by MPs. Therefore, understanding the roles of MPs in the immune system is crucial to developing alternative therapeutic treatments for diseases. This review describes the effects of MPs on various immune cells and provides plausible potential applications of the immune-modulating properties of MPs in clinical medicine.

Abeer, M. A., Shahira, M. E., & Abdelaziz, H. M. (2021). Potential use of antigen-based rapid test for SARS-CoV-2 in respiratory specimens in low-resource settings in egypt for symptomatic patients and high-risk contacts. Labmedicine, 52(2), e46-e49. doi:https://doi.org/10.1093/labmed/lmaa104

Objective Because of the rapidly emerging SARS-CoV-2 pandemic and its wide public health challenges, rapid diagnosis is essential to decrease the spread. Antigen-based rapid detection tests are available; however,

insufficient data about their performance are available. Methods The lateral-flow immunochromatographic BIOCREDIT COVID-19 antigen test was evaluated using nasopharyngeal swabs in a viral transport medium from patients with confirmed infection, contacts, and exposed healthcare professionals at Fayoum University Hospital in Egypt. Test performance was determined in comparison to the SARS-CoV-2 real-time reverse-transcription polymerase chain reaction (RT-PCR) test. Results Three hundred ten specimens from 3 categories—patients with confirmed diagnoses of COVID-19, contacts, and exposed healthcare professionals—were included; 188 specimens were RT-PCR-positive, from which 81 were detected by rapid antigen test. Overall sensitivity was 43.1%. Sensitivity was significantly higher in specimens with high viral loads. Conclusion Poor sensitivity of the BIOCREDIT COVID-19 test does not permit its use for diagnosis, and it can only be used in conjunction with RT-PCR for screening.

Gammon, R., Cook, S., Trinkle, A., Korena, T., & Benson, K. (2021). Acute hemolytic transfusion reaction due to pooled platelets: A rare but serious adverse event. Labmedicine, 52(2), 202-204. doi:https://doi.org/10.1093/labmed/lmaa056

A female patient aged 65 years with blood group A with relapsed lymphoma had thrombocytopenia; leukocyte-reduced group O prestorage pooled platelet concentrates (PPLTs) were transfused without adverse events. She was discharged home, but 1.5 hours later she returned with fever and dark urine. Hypotension and tachycardia developed; she was admitted to the intensive care unit. Post-transfusion blood and urine samples were obtained. Serial dilutions from 5 donor testing tubes and a simulated PLT pool were performed and read at immediate spin and IgG. Testing confirmed an acute hemolytic transfusion reaction (AHTR): elevated lactate dehydrogenase (996 U/L; normal range 135 U/L–225 U/L) and undetectable haptoglobin (<10 mg/dL; normal range 30 mg/dL–200 mg/dL) levels. Urinalysis showed dark amber urine but no significant quantity of red blood cells. At 37ºC the simulated pool and donor number 5 had high-titer anti-A. As a precaution, the donor was permanently deferred. Research has shown that PLT-associated AHTR has occurred with apheresis platelets but is very rare with whole blood–derived PLTs.

Oliveira, A. L., & Brown, M. (2021). SBAR as a standardized communication tool for medical laboratory science students. Labmedicine, 52(2), 136-140. doi:https://doi.org/10.1093/labmed/lmaa061

Objective Laboratory professionals must communicate effectively on an interprofessional team. It is the responsibility of Medical Laboratory Science (MLS) programs to teach communication. The structured communication tool Situation, Background, Assessment, and Recommendation (SBAR) is one way to promote effective communication. Methods Students participated in a case-based simulation activity on the importance of teamwork/communication and the use of SBAR and completed a pre/post survey on communicating interprofessionally. Results Students reported increased confidence and competence with interprofessional communication after the activity with 4 of 5 questions demonstrating a statistically significant increase in scores post SBAR instruction. Conclusions Our study demonstrates that SBAR is a suitable communication tool that can be used to increase our MLS students' confidence and competency in interprofessional communication. Educators should use this communication tool to empower MLS students to be effective members of the healthcare team.

Noulsri, E., Lerdwana, S., Palasuwan, D., & Palasuwan, A. (2021). Cell-derived microparticles in blood products from thalassemic blood donors. Labmedicine, 52(2), 150-157. doi:https://doi.org/10.1093/labmed/lmaa041

Objective To determine the number of cell-derived microparticles (MPs) in blood products obtained from donors who have thalassemia. Methods Packed red blood cells (PRBCs), plasma, and platelet concentrate (PC) were prepared according to routine procedures. We used flow cytometry to quantitate the concentration of MPs. Results The results of a comparison of MP levels in unprocessed whole blood showed that the concentration of all MPs in the donors without thalassemia trait (n = 255) was higher than in donors with thalassemia trait (n = 70). After processing, increased concentrations of MPs were documented in both groups. Among the blood components, PRBC showed higher platelet-derived MP concentrations in donors with thalassemia than in donors without thalassemia. However, PC showed higher concentrations of total MPs in donors without thalassemia than in donors with that condition. Conclusions Our results suggest little influence of thalassemia-trait status on changes in MP concentrations in blood

components.

Chandrashekar, V., Tarigopula, A., & Prabhakar, V. (2021). How reliable is automated urinalysis in acute kidney injury? Labmedicine, 52(2), e30-e38. doi:https://doi.org/10.1093/labmed/lmaa069

Objective Examination of urine sediment is crucial in acute kidney injury (AKI). In such renal injury, tubular epithelial cells, epithelial cell casts, and dysmorphic red cells may provide clues to etiology. The aim of this study was to compare automated urinalysis findings with manual microscopic analysis in AKI. Methods Samples from patients diagnosed with AKI and control patients were included in the study. Red blood cells, white blood cells, renal tubular epithelial cells/small round cells, casts, and pathologic (path) cast counts obtained microscopically and by a UF1000i cytometer were compared by Spearman test. Logistic regression analysis was used to assess the ability to predict AKI from parameters obtained from the UF1000i. Results There was poor correlation between manual and automated analysis in AKI. None of the parameters could predict AKI using logistic regression analysis. However, the increment in the automated path cast count increased the odds of AKI 93 times. Conclusion Automated urinalysis parameters are poor predictors of AKI, and there is no agreement with manual microscopy.

Corrigendum to: Comparison of nucleic acid amplification and IgM tests for the diagnosis of mycoplasma pneumoniae infection in children during a recent korean outbreak. (2021). Labmedicine, 52(2), 205. doi:https://doi.org/10.1093/labmed/lmaa092

Payán-Pernía, S., Lucía Gómez Pérez, Remacha Sevilla, Á.,F., Jordi, S. G., & Silvana, N. C. (2021). Absolute lymphocytes, ferritin, C-reactive protein, and lactate dehydrogenase predict early invasive ventilation in patients with COVID-19. Labmedicine, 52(2), 141-145. doi:https://doi.org/10.1093/labmed/lmaa105

Objective Early detection of patients with COVID-19 who will need mechanical invasive ventilation (MIV) may aid in delivering proper care and optimizing the use of limited resources. Methods In this single-center retrospective observational study, we aimed to identify simple laboratory parameters that in combination with ferritin (a surrogate marker of severe inflammation) may help predict early (first 48 hours) MIV. A total of 160 patients with COVID-19 in whom serum ferritin, absolute lymphocyte count (ALC), platelet count, C-reactive protein (CRP), and lactate dehydrogenase (LDH) had been analyzed at admission were included. Results We found that ferritin, LDH, ALC, and CRP predicted with 88% accuracy the probability of early MIV. Results indicated that LDH showed the greater area under the curve (AUC), with a value of 89.1%. Using the AUC, we established cutoff values for clinical application. Finally, we developed a classification tree based on LDH for its clinical use. Conclusion Ferritin, LDH, ALC, and CRP predict with 88% accuracy the probability of early MIV.

Agnello, L., Gambino, C. M., Sasso, B. L., Bivona, G., Milano, S., Ciaccio, A. M., . . . Ciaccio, M. (2021). Neurogranin as a novel biomarker in Alzheimer's disease. Labmedicine, 52(2), 188-196. doi:https://doi.org/10.1093/labmed/lmaa062

Background In this study, we investigated the possible role of 2 novel biomarkers of synaptic damage, namely, neurogranin and α-synuclein, in Alzheimer disease (AD). Methods The study was performed in a cohort consisting of patients with AD and those without AD, including individuals with other neurological diseases. Cerebrospinal fluid (CSF) neurogranin and α-synuclein levels were measured by sensitive enzyme-linked immunosorbent assays (ELISAs). Results We found significantly increased levels of CSF neurogranin and α-synuclein in patients with AD than those without AD. Neurogranin was correlated with total tau (tTau) and phosphorylated tau (pTau), as well as with cognitive decline, in patients with AD. Receiver operating characteristic (ROC) curve analysis showed good diagnostic accuracy of neurogranin for AD at a cutoff point of 306 pg per mL with an area under the curve (AUC) of 0.872 and sensitivity and specificity of 84.2% and 78%, respectively. Conclusions Our findings support the use of CSF neurogranin as a biomarker of synapsis damage in patients with AD.

Hye-Young, L., Sul, S., Jeong, Y. L., Mi-Na, K., Yu, J., & Sung, H. (2021). Comparison of nucleic acid amplification and IgM tests for the diagnosis of mycoplasma pneumoniae infection in children during a recent korean outbreak. Labmedicine, 52(2), 181-187. doi:https://doi.org/10.1093/labmed/lmaa048

Objective In the absence of standardized methods for Mycoplasma pneumoniae detection, we evaluated the diagnostic value of polymerase chain reaction (PCR) and IgM assays for detecting M. pneumoniae infection in children during a recent Korean outbreak. Methods The diagnostic performances of PCR and IgM assays for M. pneumoniae in 1,109 clinical specimens were evaluated by the Japanese Respiratory Society (JRS) scoring system as an interim reference standard. Results The level of agreement between both tests was fair. As analyzed by the JRS scoring system, the sensitivity of PCR was 45.2% in the group aged <5 years, 86.8% in the group aged 5 years to 10 years group, and 72.2% in the group aged 10 years to 18 years; the sensitivity of the IgM assay was 66.8%, 71.4%, and 55.6% in each group, respectively. Conclusion The sensitivity of PCR is relatively low but is superior to that of IgM assays such that diagnostic performance can be improved by both test methods in patients aged <5 years.

Petersen, J. M., Patel, S., Dalal, S., & Jhala, D. (2021). Gonorrhea and chlamydia specimen positivity rate by polymerase chain reaction at a regional veteran affairs medical center. Labmedicine, 52(2), e23-e29. doi:https://doi.org/10.1093/labmed/lmaa046

Objective Sexually transmitted infections because of Neisseria gonorrhoeae (NG) and/or Chlamydia trachomatis (CT) remain a major public health problem. Although the literature describes the population-based epidemiology of CT/NG, it does not appear to contain reference points for the statistical analyses of specimen positivity rates by nucleic acid testing (NAT) with polymerase chain reaction (PCR) that would be collected by a laboratory following best laboratory and regulatory practice. For facilities that diagnose NG and CT by a real-time PCR assay, an understanding of the expected specimen positivity rate of gonorrhea and chlamydia would be helpful for monitoring the assay for quality assurance. Therefore, on behalf of the Michael J. Crescenz Veteran Affairs Medical Center (VAMC), we present this novel quality assurance study on its CT/NG specimen positivity rates conducted by NAT with PCR. Methods Quality assurance/improvement quarterly data from April 1, 2012 to September 30, 2019 were reviewed to obtain both the test volume of PCR for CT/NG and the number of positive test results at the VAMC to collate and perform statistical analyses. Testing had been performed using the Abbott m2000 RealTime System (Abbott Park, IL). Results A total of 22,709 PCR tests for CT/NG had been performed on the veteran population; of these, 502 tests were positive for NG and 744 were positive for CT. Quarterly percentage rates ranged from 1.67% to 5.30% for CT and from 1.00% to 3.25% for NG, with average rates of 3.35% and 2.22% for CT and NG, respectively. Conclusion The establishment of an expected rate of specimen positivity of CT/NG by NAT with PCR at the VAMC is a significant novel reference point in the quality assurance (QA) literature and provides a benchmark that aids tremendously in QA for the microbiology/molecular laboratory.

Petersen, J., Dalal, S., & Jhala, D. (2021). Criticality of in-house preparation of viral transport medium in times of shortage during COVID-19 pandemic. Labmedicine, 52(2), e39-e45. doi:https://doi.org/10.1093/labmed/lmaa099

Objective With the COVID-19 pandemic, there have been supply challenges necessitating that laboratories must prepare their own viral transport medium (VTM), which provides stability for clinical specimens for diagnostic viral testing. Methods Within a veteran affairs medical center clinical laboratory, VTM was prepared with a Hanks Balanced Salt Solution (HBSS) 500 mL bottle with phenol red, sterile heat-inactivated fetal bovine serum (FBS), gentamicin sulfate (50 mg/mL), and amphotericin B (250 µg/mL). An antimicrobial mixture was made of 50 mL each of amphotericin B and gentamicin sulfate. Ten mL of FBS and 2 mL of the antimicrobial mixture were mixed into the HBSS bottle, from which 3 mL aliquots were made. Sterility and efficacy check were assessed. These preparations were conducted at our VAMC's clinical laboratory to assure adequate VTM supply during the COVID-19 shortage. Results The VTM was successfully prepared in-house, supporting uninterrupted testing for the facility and other affiliated medical facilities/centers and community living centers. Conclusion This quality assurance/improvement report represents the first published manuscript on feasible VTM preparation exclusively within a clinical microbiology laboratory during the COVID-19 pandemic.

Sohni, Y. (2021). Variation in LOD across SARS-CoV-2 assay systems: Need for standardization. Labmedicine, 52(2), 107-115. doi:https://doi.org/10.1093/labmed/lmaa103

Multiple SARS-CoV-2 emergency use authorization (EUA) tests are being used for clinical testing across various clinical testing laboratories for meeting the diagnostic challenges of the ongoing pandemic. However, cross-assay variations in performance characteristics need to be recognized. A better understanding is needed of the clinical implications of cross-assay variation in performance characteristics, particularly in the limit of detection (LOD) of the SARS-CoV-2 assays used for clinical testing. Herein, a snapshot of the diversity of SARS-CoV-2 EUA analytical assay systems including methodologies, assay designs, and technology platforms is presented. Factors affecting the variations in LOD are discussed. Potential measures that may standardize across the various assay systems are suggested. Development of international standards and reference materials for the establishment of performance characteristics may substantially alleviate potential clinical decision-making challenges. Finally, cross-assay variation in LODs among the diverse SARS-CoV-2 diagnostic assays impacts clinical decision-making with multiple assay systems in use and lack of standardization across platforms. International standards in parallel with continued cross-platform studies and collaborative efforts across pertinent healthcare entities will help mitigate some of the clinical decision-making challenges.

Krishnamurthy, K., Medina, A. M., & Howard, L. (2021). The utility of elevated serum lactate dehydrogenase in current clinical practice. Labmedicine, 52(2), e17-e22. doi:https://doi.org/10.1093/labmed/lmaa059

Objective Because of its wide tissue distribution, elevation of serum lactate dehydrogenase (LD) is a nonspecific finding. Although serum LD is still included in the prognosis and staging of metastatic melanoma and germ cell tumors, its nonspecificity has led to decreased usefulness. Methods In this study, we analyzed the serum LD assays performed in a 726-bed hospital during a 1-year period and reviewed charts of patients with serum LD of >3 standard deviations (SD). Results Of 312 patients with elevated serum LD, only 9 were patients with melanoma and germ cell tumors. The other 303 patients had other malignancies, chronic conditions, and sepsis. Conclusion Elevated serum LD (even >3 SD) is an extremely nonspecific finding that does not contribute to clinical management in a majority of patients. As such, serum LD testing should be retired from routine clinical order sets and restricted in use.

Tschoellitsch, T., Dünser, M., Böck, C., Schwarzbauer, K., & Meier, J. (2021). Machine learning prediction of SARS-CoV-2 polymerase chain reaction results with routine blood tests. Labmedicine, 52(2), 146-149. doi:https://doi.org/10.1093/labmed/lmaa111

Objective The diagnosis of COVID-19 is based on the detection of SARS-CoV-2 in respiratory secretions, blood, or stool. Currently, reverse transcription polymerase chain reaction (RT-PCR) is the most commonly used method to test for SARS-CoV-2. Methods In this retrospective cohort analysis, we evaluated whether machine learning could exclude SARS-CoV-2 infection using routinely available laboratory values. A Random Forests algorithm with 28 unique features was trained to predict the RT-PCR results. Results Out of 12,848 patients undergoing SARS-CoV-2 testing, routine blood tests were simultaneously performed in 1357 patients. The machine learning model could predict SARS-CoV-2 test results with an accuracy of 86% and an area under the receiver operating characteristic curve of 0.74. Conclusion Machine learning methods can reliably predict a negative SARS-CoV-2 RT-PCR test result using standard blood tests.

Shojaei, M., Rezvani, H., Azarkeivan, A., & Poopak, B. (2021). ABL kinase domain mutations in iranian chronic myeloid leukemia patients with resistance to tyrosine kinase inhibitors. Labmedicine, 52(2), 158-167. doi:https://doi.org/10.1093/labmed/lmaa052

Objective Tyrosine kinase inhibitors (TKIs) are considered standard first-line treatment in patients with chronic myeloid leukemia. Because ABL kinase domain mutations are the most common causes of treatment resistance, their prevalence and assessment during treatment may predict subsequent response to therapy. Methods The molecular response in Bcr-Abl1IS was tested via quantitative real-time polymerase chain reaction. We used the direct sequencing technique to discover the mutations in the ABL kinase domain. The IRIS trial established a standard baseline for measurement – (100% BCR-ABL1 on the ‘international scale’) and a major molecular response (good response to therapy) was defined as a 3-log reduction in the amount of BCR-ABL1 – 0.1% BCR-

ABL1 on the international scale. Results We observed 11 different mutations in 13 patients, including E255K, which had the highest mutation rate. A lack of hematologic response was found in 22 patients, who showed a significantly higher incidence of mutations. Conclusion Detection of kinase domain mutations is a reliable method for choosing the best treatment strategy based on patients' conditions, avoiding ineffective treatments, and running high-cost protocols in patients with acquired resistance to TKIs.

Anna-Maria Linko-Parvinen, & Turkia, H. (2021). Reporting sysmex XN absolute neutrophil count in samples with leukocyte analyzer flagging. Labmedicine, 52(2), 168-173. doi:https://doi.org/10.1093/labmed/lmaa058

Objective To provide faster laboratory data reporting, we evaluated the accuracy of Sysmex XN (Sysmex Inc, Kobe, Japan) absolute neutrophil count (ANC) in the presence of analyzer flagging. Methods Sysmex XN and manual microscopy ANC were compared with 80 autovalidated control specimens and with 280 study specimens with analyzer flagging regarding immature granulocytes (IG) >3% or other leukocyte abnormalities. Specimens with ambiguous neutrophil clusters were excluded. Results A slight positive overall method bias was seen for Sysmex XN compared to manual microscopy (n = 280), 0.025 (95% confidence interval CI], –0.023 to 0.069) × 109/L. With IG > 10% (n = 123) the bias was larger, but not clinically significant, 0.17 (95% CI, 0.060–0.25) × 109/L. No clinically significant difference was seen in neutropenic (ANC < 1.5 × 109/L) specimens (n = 91), 0.070 (95% CI, –0.013 to 0.14) × 109/L. Conclusion These data indicate that Sysmex XN ANC can be reported in the presence of certain analyzer flagging to improve patient care.