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ABSTRACTS

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E-Mail : irc2023@kdu.ac.lk
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ORAL PRESENTATIONS

ID 211

Enhancing Recovery and Reducing Severe Acute Malnutrition through Effective Management at Primary Care Level

SJW Withanage[1#], S Dias[1], G Nawagattegama[1], GRNN Waidyarathna[2], and A Karunanayake[3]

[1]Medical Officer of Health Egodauayana, Ministry of Health, Colombo, Sri Lanka
[2]Faculty of Medicine, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka
[3]Faculty of Medicine, University of Ruhuna, Galle, Sri Lanka

[#]sankha06@hotmail.com

Abstract

Inadequate nutrition counseling is a significant problem associated with malnutrition. The intervention aimed to evaluate the effectiveness of nutrition counseling and the increased number of nutrition clinics at the Medical Officer of Health (MOH) level among 6 months to 6 year old children. The sample size was 44 children with Severe Acute Malnutrition (SAM). World Health Organisation criteria and child health development records were used to determine severe acute malnutrition (weight-for-height Z score< -3). Nutrition counseling and feeding practices were given to the mothers and the public health midwives of the Egodauyana MOH area. Eggs and animal-origin protein consumption were highlighted. Specially planned four nutrition clinics were conducted every week in the MOH area. Nutritional and frequent clinical follow-ups were done for 6 months. Re-evaluation of their weight and height was done after 3 months using the same criteria mentioned above. Among 44 children diagnosed with SAM (mean SAM period 4.6 months, 2.3 Standard Deviation), 33 children recovered through a meticulously planned high-energy diet. Fifteen (34.1%) received exclusive follow-ups at the MOH nutrition clinic. Fifteen (34.1%) were monitored by both the hospital and the MOH clinic. Three (6.8%) children recovered in the private sector. Eleven (25%) children showed no improvement in weight at the end of the 6 month follow-up period. SAM decreased from 15 to 2, which was exclusively and effectively managed by the MOH level, including meticulous high-energy diets and follow-up clinics that facilitated recovery from SAM.

Keywords: *Severe acute malnutrition, Moderate acute malnutrition, Medical officer of health*

ID 212

Evaluating the Efficacy of School Sexual and Reproductive Health Education in Preventing Teenage Pregnancies: A Case Study of a Selected Health Area during the COVID-19 Pandemic in 2021

SJW Withanage[1#], CB Ranaweera[1], RADDA Kumara[1], KPT Dharmasena[1], WGMMSD Chandrasiri[1], B Aravindan[1], S Dias[1], HWN Sewwandi[1], WDS Lakshima[2], and A Karunanayake[3]

[1]Medical Officer of Health, Egodauayana, Ministry of Health, Colombo, Sri Lanka
[2]Post Graduate Institute of Medicine, University of Colombo, Colombo, Sri Lanka
[3]Faculty of Medicine, University of Ruhuna, Galle, Sri Lanka

[#]sankha06@hotmail.com

Abstract

The study aimed to evaluate the effectiveness of School Sexual and Reproductive Health Education (SSRHE) in reducing teenage pregnancies in Egodauyana Medical Officer of Health, the area with the highest teenage pregnancy rate in Colombo Colombo Regional Director of Health Services area in 2021, amidst the devastating COVID-19 pandemic. This study involved the implementation of SSRHE programs in 12 high-risk schools. The target population consisted of students in grades 10 and above. In 2021, a total of 75 teenage mothers had registered in the area; 34 individuals (45.3%) belonged to Group 1, comprising teenage mothers attending school and residing in the area, while the remaining 41 individuals (54.7%) were classified under Group 2, encompassing nonresident teenage mothers. The age distribution revealed that 44 teenage mothers were aged 18–19 years, 28 were in the 16–17 age group, and three were under 16 years old. In 2022, registered teenage pregnancies decreased to 68. Within this cohort, 17 individuals (26.5%) were classified as belonging to Group 1, while 51 individuals (73.5%) were categorized under Group 2. The age distribution revealed that 48 teenage mothers were aged 18–19 years, 16 were in the 16–17 age group, and four were under 16 years old. There was a statistically significant reduction in teenage pregnancies within Group 1 when compared to 2021 ($p = 0.014$). Conversely, Group 2 experienced a substantial increase ($p = 0.000$) in teenage pregnancies. A study highlights the value of inclusive SSRHE programs in reducing teen pregnancies. However, additional support is necessary for nonresident teen mothers.

Keywords: *Sexual and reproductive health, Teenage pregnancies*

ID 222

Prediction of Biomarkers to Detect Severe Dengue in the Acute Stage

AKM Madushani[1#], H Abeygoonawardena[1], PBV Navaratne[1], RANK Wijesinghe[1], and AD De Silva[1]

[1]Faculty of Medicine, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka

[#]ekmaheshika01@gmail.com

Abstract

Dengue virus infection presents a wide spectrum of manifestations including asymptomatic infections, Dengue Fever (DF), or severe dengue, such as Dengue Haemorrhagic Fever (DHF) and dengue shock syndrome in affected individuals. Our aim was to predict the likelihood of a dengue patient, developing a severe form of the disease at an early stage, for more efficient patient management. Many studies have been carried out in protein assay methods to identify potential biomarkers, but quantitative transcriptomic level studies are rare for dengue. The extracted RNAs from the peripheral blood mononuclear cells of 59 DF patients and 35 DHF patients during the febrile stage of the disease were used to measure the expression levels of selected genes by quantitative polymerase chain reaction. The mRNA expression levels of cytokines IL-06, IL-10, LTF, TGFBR3, UQCRQ, and RASSF5 were analysed by relative quantification using GAPDH as a reference. The study revealed that the mRNA level of IL 06 was upregulated and other five genes such as IL-10, LTF, TGFFBR3, UQCRQ, and RASSF5 were down-regulated in DHF compared to DF patients during the acute phase of dengue infection. Statistically significant differences were found for UQCRQ and RASSF5 gene expression levels in DHF and DF patients. These may be useful as potential biomarkers for the clinical prognosis of severe dengue. Further studies need to be done to confirm the findings.

Keywords: *Dengue, Biomarkers, Real-time Polymerase Chain Reaction*

ID 285

Retrospective Study on the Quality Monitoring Procedure of Blood Components in Newly Established Manufacturing Facility at the Department of Transfusion Medicine, University Hospital, General Sir John Kotelawala Defence University

TI Withanawasam[1#], WAS Fernando[2] and LLS Udarika[2]

[1]Faculty of Medicine, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka
[2]University Hospital, Kotelawala Defence University, Werahera, Sri Lanka

[#]trilitiaw@kdu.ac.lk

Abstract

Transfusion service must adhere to the strict quality assurance program to ensure minimal to zero risk to the recipient and optimal therapeutic efficacy. Study is planned to assess a selected internal quality monitoring parameters of blood components produced at University Hospital, Kotelawala Defence University . The samples from all components collected and processed from March 2022 to April 2023 were tested and analyzed for Transfusion Transmitted Infection (TTI) markers. According to international standards four units of each component were selected by simple random sampling for internal quality parameters. The samples were obtained from each unit according to standard procedure and tested for specific quality parameters. Number of discard units was calculated according to the component type. 1477 Red Cell Concentrates (RCC), 1291 fresh frozen plasma and 1036 platelet concentrates have been produced. Thirteen (0.88%) unit samples were TTI screening reactive. Mean packed red cell volume was 291 ml and haemoglobin per unit was 65 g/unit. Mean haematocrit was 68% and pH was 6.9. Mean volume and count in platelet concentrates were 69 ml and 74×10^9/unit respectively. White cell contamination was 0.02×10^9 /unit. Swirling was present in all units. Produced components met $\geq 75\%$ of minimum standards according to the international guidelines. 27.9% of RCC supply deficit was detected. Total RCC discard was 1.28%. Implementation of standard operating procedures and validation of the instruments and techniques have been successful according to the findings. The study ensures the quality and safety of blood components as a therapeutic product.

Keywords: *Blood components, Internal quality control, Quality assurance*

ID 338

Information Security Awareness and Practices of Systems Administrators in State Sector Health Institutes in Sri Lanka

MDPN Gamage[1#], GGAK Kulatunga[2], MDRN Dayarathna[3], and P Karunapema[2]

[1]Office of Provincial Director of Health Services, Central Province, Kandy, Sri Lanka
[2]Health Information Unit, Ministry of Health, Colombo, Sri Lanka
[3]School of Computing, University of Colombo, Colombo, Sri Lanka

[#]m3119@pgim.cmb.ac.lk

Abstract

Sri Lanka is embarking on the process of digital health transformation resulting accumulation of wide variety of sensitive health information in digital format. Real time information is critical for decision making. Securing integrity and confidentiality of information while preserving the availability is a challenging process. This research is aimed to assess the knowledge and practices of information system administrators related to the information security of state-sector health information systems. An online questionnaire was emailed to all the system administrators of state sector health institutions with functional health information systems and collaborating with the Ministry of Health through focal points. Responses were recorded over a period of three weeks. Interviews were carried out with the participants who responded to the online questionnaire. A descriptive analysis was carried out afterward. The response rate for the online questionnaire was 50% ($n = 40$). Out of the responded, 55% of the information systems contain information classified as "confidential". Among the system administrators, 57.8% are aware of at least three standards, guidelines, or policies relevant to health information security. The majority of institutes (84.2%) were not practicing the recommended information security practices. Fifteen system administrators consented and participated in the key informant interviews. The majority of health information systems contain confidential information. The current level of health information security practices is not adequate to confront the constantly changing information security threats. Enhancing knowledge and practices related to health information security guidelines, standards, and policies will lead to secured healthcare delivery by ensuring confidentiality, integrity, and availability of health information.

Keywords: *Digital health, Information security, Health Information Systems*

ID 414

A Five-Year Assessment of Medicines Expenditure in the State Sector to Inform a Reform Strategy for the Economic Crisis

ADM Gunasekara[1#], ME Balasooriya[1], MMP Madumadavi[2], LC Wanniarachchi[2], HMK Wickramanayake[2], and BMR Fernandopulle[1]

[1]Faculty of Medicine, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka
[2]Medical Supplies Division, Ministry of Health, Colombo, Sri Lanka

[#]danushigunasekara@kdu.ac.lk

Abstract

The ABC methodology is designed to assess the appropriateness of procurement of medicines; A = top 10–19% of medicines which account for approximately 70% of the total cost, B = top 20–30% of medicines which account for 20% of the total cost, C = remaining 51–70% of medicines that account for 10% of the total cost. The aim of the study was to identify pharmaceuticals included in group A causing highest costs for the state sector healthcare system. The ABC analysis was conducted by analyzing the percentage cumulative costs of all issued medicines in the state sector from the year 2017 to 2022, using aggregated data from the medical supplies division. Group A included a mean of 12.7% (11–13.5%) medicines over the years utilizing 70% of the total cost, and included both high-volume and high-unit-cost unit cost medicines. The majority of the high-volume medicines were for non-communicable diseases, which was appropriate. However, the percentage of non-essential medicines in group A increased while essential medicines decreased from 2017 to 2022. In 2021 and 2022, there was a reduction in the expenditure with a notable decrease in the number of defined daily doses of essential medicines such as losartan potassium, atorvastatin, and metformin. Among the medicines identified for intervention are the top five high-unit-cost medicines (i.e., albumin, tenecteplase, human immunoglobulin, trastuzumab, bevacizumab) and high-volume medicines, paracetamol and vitamin C. Appropriateness of high-cost medicines that determines expenditure is critical. Prioritizing procurement of essential medicines, conducting health technology assessment and having end-user guidelines are recommended when designing a reform strategy.

Keywords: *Costs, Pharmaceuticals, Availability*

ID 432

Evidence of Paediatric Renal Injury in Farming Communities Residing in Highly Agricultural Areas in Sri Lanka: A Cross-Sectional Study with Urinary Biomarkers

PMMA Sandamini[1#], PMCS de Silva[1], EPS Chandana[2], SS Jayasinghe[3], C Herath[4], and ES Wijewickrama[5]

[1]Faculty of Science, University of Ruhuna, Matara, Sri Lanka
[2]Faculty of Technology, University of Ruhuna, Matara, Sri Lanka
[3]Faculty of Medicine, University of Ruhuna, Galle, Sri Lanka
[4]Sri Jayewardenepura General Hospital, Sri Jayawardenapura, Sri Lanka
[5]Faculty of Medicine, University of Colombo, Colombo, Sri Lanka

[#]mihiri.a.sandamini@gmail.com

Abstract

Intensive use of agrochemicals and unsafe handling practices are commonly identified in farming communities residing in highly agricultural areas. Although they do not directly involve in field work, exposure via aerosols, contaminated water, and improper domestic storage of agrochemicals may make the females and children in farming families more likely to be exposed to risk factors of kidney injury. However, kidney health of these paediatric communities has not been properly studied in Sri Lanka. The present study aimed to perform a comparative assessment of paediatric kidney health in farming families compared to non-farming families in selected regions in Sri Lanka, where crop cultures are extensively practiced. This cross-sectional study was performed with children and adolescents (10–17 years old) representing paddy and vegetable farming families with Chronic Kidney Disease of unknown aetiology (CKDu) in endemic and non-endemic regions (n=674) in Sri Lanka, along with an age-matched control group from non-farming families in within the same residential areas (n=722). The median (interquartile range) of urinary KIM-1 (ng/mg.Cr) 0.21 (0.63-0.44) and urinary Cystatin C (ng/mg.Cr) 56.10 (22.94-134.91) levels of the participants in the farming families in CKDu endemic regions were significantly ($p<0.0001$) elevated compared to their counterparts in non-farming families in the same area. Weak but significant positive correlations were identified in the children's urinary NGAL levels and UACR values with the factor of their parent's involvement in farming. Baseline evidence of elevated urinary biomarker levels indicates a notably higher risk of kidney injury for children in farming families. However, studies with longitudinal observations with a particular focus on environmental exposures to potential risk factors are recommended to elucidate paediatric renal health outcomes associated with the farming lifestyle.

Keywords: *Biomarkers, Kidney injury, Paediatric*

ID 482

Emergent Risk of Sub-Clinical Renal Injury within Paediatric Communities in the Central Highlands of Sri Lanka: A Region where Chronic Kidney Disease of Unkown Aetiology is not Documented among Adults

TDKSC Gunasekara[1], PMCS de Silva[1#], EPS Chlandana[2], S Jayasinghe[3], C Herath[4], S Siribaddana[5], and N Jayasundara[6]

[1]Faculty of Science, University of Ruhuna, Matara, Sri Lanka
[2]Faculty of Technology, University of Ruhuna, Matara, Sri Lanka
[3]Faculty of Medicine, University of Ruhuna, Galle, Sri Lanka
[4]Sri Jayawardenapura General Hospital, Sri Jayawardenapura, Sri Lanka
[5]Faculty of Medical and Allied Health Sciences, Rajarata University, Anuradhapura, Sri Lanka
[6]Nicholas School of the Environment, Duke University, Durham, USA

[#]chathura@zoo.ruh.ac.lk

Abstract

Concerning the impact of Chronic Kidney Disease of uncertain etiology (CKDu), central highlands in the wet climatic zone of Sri Lanka are considered to be safe, as CKDu is not reported among adults. However, being an agricultural area with intensive agrochemical usage, we hypothesized that there could be exposure-related renal health risks for the inhabitants. Hence, this study aimed to assess renal health of residential paediatric communities in this particular region in comparison to an age-matched control group from the low-country dry climatic zone. Within 12-18 years of age, 596 students (274 boys, 322 girls) from the central highlands of the wet climatic zone, and 488 students (229 boys, 259 girls) from the dry climatic zone participated in this cross-sectional study. Creatinine-adjusted median (interquartile range) urinary KIM-1 level of the participants in the wet-zone $[0.2476(0.002 - 0.664)$ ng/mgCr] was significantly high $(p < 0.0001)$ compared to the participants in the dry-zone [0.0709 (0.002-0.232) ng/mgCr]. Participants in wet-zone showed significantly high $(p = 0.0139)$ urinary NGAL level $[3.562(1.757 - 7.539)$ ng/mgCr] compared to the participants in the dry-zone [3.169 (1.602-5.847) ng/mgCr]. Moreover, significant elevation $(p = 0.0024)$ of urinary Albumin to Creatinine Ratio (ACR) level was observed in participants of the wet-zone $[3.012(1.752 - 5.546)$ mg/g], comparted to those of the dry-zone $[2.589(1.565 - 4.194)$ mg/g]. The incidences of albuminuria (ACR ≥ 30 mg/g) were 2.9% and 1.2% among the participants in wet and dry climatic zones respectively. Significantly elevated urinary NGAL, ACR, and particularly KIM-1 which is a more reliable indicator of impaired kidney function, reflect preliminary evidence of a potential risk of subclinical renal injury among the residential paediatric communities in the central highlands in Sri Lanka. In-depth studies with longitudinal observations are warranted for characterization of the paediatric renal health risks comprehensively.

Keywords: *Albumin:creatinine ratio, Kidney injury, KIM-1, NGAL, Paediatric, Sri Lanka*

ID 572

Correlates of Disease Outcomes in Patients with COVID-19, Admitted to Intensive Care Units of University Hospital, Kotelawala Defence University

HK Weerasinghe[1#], TDG Liyanage[1], PK Weerawickrama[1], AMDS Karunarathne[1], and PTR Makuloluwa[2]

[1]Faculty of Allied Health Sciences, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka

[2]Faculty of Medicine, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka

[#]harindi30@gmail.com

Abstract

COVID-19 became a pandemic affecting millions of people globally. Most patients were critically ill when admitted, requiring intensive care. Cytokine-mediated hyperinflammatory response leads to critical illness where patient outcomes were influenced by the extent of hyperinflammation, demographics, comorbidities, and sepsis. Early recognition of risk factors and identification of predictive markers is beneficial to alter the course of disease progression. Studying demographic and clinical characteristics, sepsis & inflammatory markers of COVID-19 patients was aimed to identify associates of poor patient outcomes. A retrospective cohort study was conducted among 219 COVID confirmed patients, admitted to Intensive Care Units (ICUs) of University Hospital of Kotelawala Defence University from June to December 2021. Demographics, comorbidities, sepsis markers (procalcitonin, leukocyte count, absolute neutrophil count, absolute lymphocyte count and neutrophil-lymphocyte ratio , inflammatory markers (C-Reactive Protein (CRP), Lactate Dehydrogenase (LDH) and serum ferritin) and patient outcomes (deceased or discharged) were collected. Data were analysed using descriptive statistics, Chi-square test and Mann-Whitney U test. Bi-variate logistic regression was done to determine predictors of poor patient outcomes. Outcomes were significantly poor among elderly (> 60 years), with ≥ 2 co-morbidities, existing diabetes mellitus, hypertension, renal impairment, and with > 1 week of ICU stay. Peak levels of all sepsis markers showed a statistically significant association with poor patient outcomes. Peak levels of CRP and LDH were significantly higher in the 'deceased group', while serum ferritin was not. In conclusion, age, comorbidities, ICU stay, sepsis and inflammatory markers (CRP & LDH) showed a statistically significant association with poor outcomes. CRP was the best predictor of poor outcomes in critically ill COVID-19 patients.

Keywords: *COVID-19, Markers, Patient outcomes*

ID 640

Breeding Places and Susceptibility Status of *Anopheles stephensi* Larvae for Temephos in Jaffna, Sri Lanka

S Priyadarshani[1#], RDJ Harishchandra[1], MAST Fernando[1], DGIC Somaweera[1], and P Ranweera[1,2]

[1]Anti Malaria Campaign, Ministry of Health, Colombo, Sri Lanka
[2]Anti Leprosy Campaign, Ministry of Health, Colombo, Sri Lanka

[#]uoc.priyadarshani@yahoo.com

Abstract

Anopheles stephensi mosquito is an invasive potential malaria vector in Sri Lanka. Adult *Anopheles stephensi* shows resistance to many insecticides. Hence, identification of breeding habitats and susceptibility to larvicides are crucial to plan effective vector control programmes. A study was conducted to identify breeding places and to assess susceptibility to temephos larvicide for *Anopheles stephensi* in Jaffna, Sri Lanka. A study was conducted in Jaffna Medical Officer of Health area including four Grama Niladhari divisions (J-83, J-84, J-85 & J-86) with high prevalence of *Anopheles stephensi.* Larval surveys were conducted covering potential breeding places of *Anopheles stephensi* from September 2021 to September 2022. The results were analysed using Kruskal-Wallis and Mann-Whitney U test. The susceptibility to temephos, was evaluated for *Anopheles stephensi*larvae using five selected concentrations (0.03125 mg/L, 0.0625 mg/L, 0.125 mg/L, 0.25 mg/L, 0.375 mg/L). Probit analysis was performed to calculate LC99. Three types of places were positive for *Anopheles stephensi*; wells (94.9%), cement tanks (3.8%) and water storage barrels (1.3%) out of 8661 examined. Positivity rate of *Anopheles stephensi* for wells, cement tanks and water storage barrels were 4.2%, 0.6% and 0.2% respectively. Positivity of *Anopheles stephensi* in wells were significantly higher than the other breeding habitats $(H(3) = 14.74, p = 0.002)$. LC99 value of temephos for *Anopheles stephensi* for the tested population was 0.249 mg/L. The predominant breeding place of *Anopheles stephensi* is Wells. The *Anopheles stephensi* larvae in Jaffna are susceptible to temephos larvicide. These findings can be used to design appropriate vector control programme to control *Anopheles stephensi* in Jaffna, Sri Lanka.

Keywords: *Anopheles stephensi, Temephos, Breeding places*

ID 642

Imaging Guided Combined Structural and Coronary Heart Procedures in One Setting, for Awake Patients: Does it Help Save Money and Time in a Resource- Constrained Health System, without Substantial Complications?

PM Athauda-arachchi[1,2#]

[1]Faculty of Medicine, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka
[2]Durdans Hospital, Colombo, Sri Lanka

[#]athaudaarachchipm@kdu.ac.lk

Abstract

The provision/receipt of cutting-edge cardiac care, in a country in financial crisis, is a difficult task for both providers and patients. Many Sri Lankan patients seem to present currently with multiple cardiac problems in a setting of an acute or convalescent myocardial infarction, that requires additional procedures other than culprit coronary artery revascularization by Percutaneous Coronary Intervention (PCI). For financial and skilled human resource implications, treating all these in one setting is desired by patients in middle-income countries like Sri Lanka. The safety and efficacy of severe, non-culprit artery revascularization have been evaluated in clinical trials in the past. However, the safety or feasibility of performing structural heart interventions in the same setting as PCI is based on clinical judgment, aided by cathlab hemodynamic data and imaging modalities, based on high-end digital equipment and software. We illustrate examples where such procedures can be safely undertaken in a single setting, even in a resource- constrained environment, assisted by contemporary digital technologies: complicated atrial septal defect closure with complete right coronary occlusion intervention, and percutaneous mitral commissurotomy with right coronary occlusion intervention, transcatheter aortic valve implantation with left-main coronary intervention are presented as examples of such combined structural and coronary procedures in one setting. Further randomized trials will be required to systematically evaluate these experiences for widespread use.

Keywords: *Simultaneous structural heart and coronary interventions, Atrial septal defects, Percutaneous trans-septal mitral commissurotomy, Percutaneous coronary intervention, transcatheter aortic valve implantation.*

ID 644

Analysis of User Needs to Facilitate in Designing a Laboratory Information Management System for Selected Hospitals in Sri Lanka

HHLK Fernando[1], NS Fernando[1#], I Abeykoon[1], and T Sahama[2]

[1]Faculty of Medicine, Sir John Kotelawala Defence University, Rathmalana, Sri Lanka
[2]School of Health Information Science, University of Victoria Australia, Melbourne, Australia

[#]nayanashi@kdu.ac.lk

Abstract

Nearly 70% of objective information required for patient management is derived from medical laboratories. Sri Lanka highlights the necessity of a laboratory information management system (LIMS) that supports private public partnerships. This study aimed at identifying user requirement on account of designing a scalable LIMS suitable for private sector hospitals in Colombo. A descriptive study was conducted in four selected private hospitals in Colombo using qualitative data derived from in-depth interviews of all categories of health care providers. Interviews were prompted by an off the shelf LIMS. Three rounds of Delphi process were conducted to refine the findings. Process observations and document review were also done. Data was analysed thematically. LIMS requirements overarching pre-analytical, analytical and post analytical phases of a laboratory cycle were identified as, data capturing, data storing, data processing, data sharing. The fifth theme, data security encircles all themes. Six activity touch points: patient identification and registration, request or test ordering, sample collection, sample receiving, sample management and issuance of reports were also identified. Requirements of other support services were: procurement and stock management, test pricing and business rule engines, quality control, integration, and generation of statistics. A well design LIMS requires data capturing, data storing, data processing and data sharing in all activity touch points while assuring data security. Further, it should support procurement, business rule engines, quality control, integration, and statistics generation.

Keywords: *Laboratory Information Management System, Hospital Information System, User needs*

POSTER PRESENTATIONS

ID 021

Unmasking the Psychological Battle: Psychotherapy Treatments in Sri Lankan Military Veterans

NHD De Silva[1#]

[1]International Institute of Cambodia, University of Technology, Phnom Penh, Cambodia

[#]nhddesilva@gmail.com

Abstract

This research paper focuses on exploring psychopathology in military veterans and examining the effectiveness of psychotherapy treatments in Sri Lanka. The study aims to address three research questions namely, What are the prevalent forms of psychopathology observed in Sri Lankan military veterans? What are the existing psychotherapy treatments utilized in Sri Lanka to address the mental health needs of military veterans? and What are the challenges and potential solutions in providing psychotherapy services to Sri Lankan veterans? The research objectives are to identify the psychopathological conditions commonly experienced by military veterans in Sri Lanka through a comprehensive literature review and to explore the efficacy of psychotherapy treatments in addressing the mental health needs. The research methodology employed in this study involves a comprehensive literature review. This research study is limited to three selected psychopathologies common among military veteran. The psychopathologies selected in study are Traumatic Brain Injury, Substance Used Disorder and Post Traumatic Stress Disorder. Interviews and focus group discussions will be conducted with veterans and mental health professionals in data collection. Thematic analysis will be used to analyse the collected data and draw meaningful conclusions. The findings of this research will shed light on the prevalent forms of psychopathology in Sri Lankan military veterans and provide an understanding of the psychotherapy treatments currently used. The research aims to contribute to the existing knowledge base, inform policymakers and healthcare professionals, and improve the mental health support provided to Sri Lankan military veterans.

Keywords: *Psychopathology, Military veterans, Psychotherapy treatments*

ID 111

Immunogenicity of Dengue E-protein Peptides Modified with Para-nitro Phenylalanine

M Nadugala[1#], PH Premaratne[1] and CL Goonasekara[1]

[1]Faculty of Medicine, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka

[#]mahesha@nsf.gov.lk

Abstract

Few conserved epitopes from the Envelope (E) protein of the dengue virus have previously been identified to show a broader immunogenicity and neutralization towards all the fours dengue virus serotypes. Inclusion of an unnatural amino acid such as para-nitro phenylalanine in the place of a phenylalanine in a protein, has previously been reported to enhance the immunogenicity. The aim of this research was to explore the effect of having para-nitro phenylalanine in the place of phenylalanine of those conserved E protein epitopes in enhancing their immunogenicities. Therefore peptides representing these epitopes, namely P1/E, P2/E, P3/E and P4/ E, were commercially synthesized with and without the inclusion of a para-nitro group on phenylalanine. Three mice (Balb/c) batches were immunized with each peptide. The immunogenicity of these peptides was studied, by assessing the antibody levels generated against the corresponding peptide in collected antisera. The whole E protein was used as a positive control and the adjuvant alone was used as the negative control. All the peptides, with or without the modification, induced antibodies in mice as measured using ELISA assays. Mean OD values of unmodified and modified peptides are as follows; P1/E:0.390 $\pm$ 0.02a, P2/E:0.305 $\pm$ 0.01a, P3/E: 0.244 $\pm$ 0.02b, P4/E: 0.238 $\pm$ 0.01a, Mod-P1/E; 0.311 $\pm$ 0.01b, Mod-P2/E: 0.166 $\pm$ 0.02b, Mod-P3/ E: 0.371Âś0.03a, Mod-P4/E: 0.253Âś0.01a. Out of the four peptides studied, P3/E with the para-nitro phenylalanine modification (Mod-P3/ E), produced significantly high antibody levels as compared to its unmodified version. Interestingly for rest of the peptides, there were no significant differences in the levels of antibodies between the ones with and without para-nitro phenylalanine. Accordingly, this study does not provide sufficient enough evidence to support the claim that inclusion of an unnatural amino acid in the place of a phenylalanine in a protein enhances the immunogenicity in the tested E protein epitopes of the dengue virus.

Keywords: *Dengue, Conserved E-protein Epitopes, Unnatural amino acid, Immunogenicity*

ID 121

Diversity of Culturable Aerobic Bacteria in the Midgut of Filariasis Vector, *Culex quinquefasciatus* Adults in Gampaha District, Sri Lanka

HEMRTK Hathnagoda[1], PA Goonathilake[1], KAT Buddhinee[1], WDP Welgama[1], PKHN Gunarathna[1], HAK Ranasinghe[1#], and EHL Perera[1]

[1]Faculty of Health Sciences, CINEC Campus, Malabe, Sri Lanka

[#]achinikoshilaa@gmail.com

Abstract

Symbiotic bacteria established in mosquito gut significantly influence disease transmission, host-parasites interaction, and determination of vectorial capacity. The present study focused on screening of midgut microbial diversity of adult *Culex quinquefasciatus* as a fundamental pre-requirement to support the paratransgenesis process, which is progressing in Sri Lanka. Mosquito surveys were conducted from September 2022 to December 2022 at 3 sites (Kelaniya, Gampaha, and Meerigama) in the Gampaha Medical Office of Health area of Sri Lanka. Unfed adults were sacrificed using a cold shock and surface sterilization was performed using 70% ethanol followed by rinsing with Phosphate Buffer Saline (PBS). The midgut of adults was dissected and the midgut of ten individuals was pooled in sterile PBS (250 μl) to make a homogenized lysate. A dilution series ($100 - 10^{-7}$) was made from lysate and 100 μl from each dilution was plated on Plate Count Agar and pure cultures for each microbe were obtained. Isolated bacteria were subjected to 16S rRNA amplification. A total number of 4 bacterial families Staphylococcaceae, Streptococcaceae, Bacillaceae, and Moraxellaceae were identified. Family Bacillaceae (43%) and Moraxellaceae (4%) were found as the highest and least abundant bacterial families respectively. Better separation of colonies was observed at 10^{-3}, 10^{-4}, and 10^{-5} dilutions. Species composition was dominated by 5 major genera; Staphylococcus, Streptococcus, Lysinibacillus, Acinetobacter and Pseudomonas. *Lysinibacillus sphaericus* was identified as the most abundant microbial species isolated from the midgut. The relative distribution of midgut bacteria differed significantly among field-caught adult strains, collected from three different study areas. The present data strongly encourage further investigations to explore the potential usage of the microbes in paratransgenesis control approaches.

Keywords: *Eco-friendly, Mosquito, novel, Paratransgenesis, Symbiotic*

ID 122

Molecular Identification of Vector Mosquitoes of Dirofilariasis in Matale District, Sri Lanka

HAK Ranasinghe[1#], HGNT Rathnayaka[1], PMB Pannila[1], DV Wickramarathne[1], NS Kudhoos[1], PWD Kasurika[1], and EHL Pereral[1]

[1]Faculty of Health Sciences, CINEC Campus, Malabe, Sri Lanka

[#]achinikoshilaa@gmail.com

Abstract

Dirofilariasis is a vector-borne parasitic disease with a worldwide distribution. In Sri Lanka, only one study has been recorded so far corresponding to vector identification which has only been conducted by standard entomological techniques. Therefore, the present study for the first time records the molecular identification of the vector mosquito of Dirofilariasis in Sri Lanka. Entomological sampling was performed at randomly selected mosquito breeding sites in two selected Medical Officer of Health (MOH) areas; Ambanganga-korale and Matale, in Matale district. Sampling was during October to December 2022 and 156 adult female mosquitoes were collected of Armigeres, Culex, Mansonia and Anopheles genera. Mosquitoes were separated into pools based on the species, sampling location and the date of collection. Genomic DNA was extracted from 200μl of the mosquito homogenate, Polymerase Chain Reaction (PCR) amplification was performed using designed primers specific to *Dirofilaria repens*. The PCR products were subjected to agarose gel electrophoresis and one positive sample was identified to be compatible with the Dirofilariasis band size. Sequencing was performed to further confirm the presence of Dirofilaria in the amplified product. Anopheles was the most abundant genera (27.56%), followed by both Mansonia and Culex (25.64%) while Armigeres was the least abundant (21.15%) in the study sites. Analyzed sequence results confirm the presence of *Dirofilaria repens* in the mosquito samples of *Armigeres subalbatus* collected from Ambanganga-korale MOH. Present study confirms the presence of Dirofilaria repens in the study area of the Matale district and *Armigeres subalbatus* as the responsible vector for disease transmission. Moreover, study findings are effective in implementing vector-controlling measures against human infection of Dirofilariasis, targeting the exact vector that transmits the disease condition.

Keywords: *Diagnosis, Dirofilariasis, Mosquito, Parasitic, Polymerase Chain Reaction*

ID 190

Intervention of 5A Smoking Cessation Method at Eastern Naval Area in 2021/22

HDI Samarawickrama[1#], PGWWK Wanasinghe[1], WHT Priyadarshani[1], and DPK Arachchige[1]

[1]Navy Hospital, Trincomalee, Sri Lanka

[#]dumindaindunil@yahoo.com

Abstract

Non Communicable Diseases (NCDs) have become the leading cause of morbidity and mortality. Tobacco use is a recognized causal factor in the genesis of NCDs. Smoking is the most frequent cause of avoidable premature death. Comparing modifiable cardiovascular risk factors, smoking has the strongest impact on cardiovascular mortality. Long COVID-19 linked pandemic of NCDs are predicted. Hence, quit smoking is a very important health intervention and 5 A's (United States-public health clinical practice guideline) is a recommended psychological intervention method for persons willing to quit/cease smoking. Purposive intervention study sample of naval personals ($n = 147$) had long term unhealthy behavior of smoking. 87% ($90/147$) had NCD and pre NCD conditions (including Impaired Glucose Tolerance, > 100mg/dl, high Body Mass Index > 25, Low Density Lipoprotein > 116mg/dl) in eastern naval area during the period 03/2022 to 10/2022. Demographic description, 19.8% ($n = 30$) in age group 20-29, 66.6% ($n = 105$) in 30-39 and 13.2% ($n = 12$) in 40-49 year age groups. Only 17% ($n = 28$) had advanced level educational qualifications. 83% ($n = 120$) were junior sailors. Cohort sample was directed to a brief interventional study on 5 A's method [ask, awareness, assess, arrange, award]. WhatsApp, Google form digital tools were used for health education, monitoring and support. Sample was followed up for 6 months period by naval nurses, counseling officers and public health inspectors. 72.34% ($n = 107/147$) of the study sample quit/reduced smoking by 39.8% within 3 months since beginning of intervention of 5A method in Eastern Naval Area. Brief intervention and 5A's method can be used as an effective low cost method for quit smoking in resilience in post Covid era to control and prevent predictable pandemic of long Covid complications in NCD. Age, educational status, discipline and seniority may effect on outcome.

Keywords: *Non-communicable diseases, 5A method*

ID 321

Prevalence and Associated Factors of Selected Cardio-respiratory Symptoms and Peak Expiratory Flow Rate Measurement among Carpenters in Moratuwa Medical Officer of Health area

KDBRI Jayaweera[1#] and I Suraweera[2]

[1]National STD/AIDS Control Programme, Ministry of Health, Colombo, Sri Lanka
[2]Directorate of Environmental Health, Occupational Health and Food Safety, Ministry of Health, Colombo, Sri Lanka

[#]m32102@pgim.cmb.ac.lk

Abstract

Indoor air pollution and exposure to hazardous particles in the air especially particulate matter (PM10) has a huge impact on the cardio- respiratory system. Carpenters are at a major risk of getting exposed to wood dust and other chemical vapors, therefore they are at higher risk of developing cardio-respiratory diseases. To determine the prevalence & associated factors of selected cardio- respiratory symptoms and measure the pulmonary function by Peak Expiratory Flow Rate (PEFR) among carpenters in Moratuwa Medical Officer of Health (MOH) area. Cross-sectional analytical study, conducted among 461 carpenters in 20 Grama Niladhari divisions of Moratuwa MOH area from April 2017 to January 2018 using multistage sampling. Pre-tested, interviewer-administered questionnaire and peak flow meter were used for data collection. Out of 443 respondents during the previous month most prevalent acute respiratory symptom was cough 61.6% (n=273) followed by wheezing 35.4% (n=157). The most prevalent chronic respiratory symptom was chronic cough 19.9% (n=88) and chronic phlegm 18.5% (n=82). Central chest pain was complained by 25.3% (n=112) complained of these, 24.8% (n= 110) of participants' chest pain had eased with rest. Hypertension was diagnosed in 17.6% (n=76) and 86.9% (n=385) had at least one cardio-respiratory symptom. More than half 60.7% (n=269) had PEFR <80% of their predicted values. There was a statistically significant association ($p<0.05$) between the presence of at least one cardio-respiratory symptom with age category, education level, working duration, awareness and practices to prevent dust exposure and family history of cardio-vascular diseases. Increased prevalence of cardio-respiratory symptoms and decrease PEFR was probably due to prolong exposure to wood dust. Occupational health programme of the ministry of health should target at risk work groups such as carpenters in providing services. Carpenters should adopt proper protective measures adequately in order to reduce the prevalence of symptoms.

Keywords: *Carpenters, Cardio-respiratory symptoms, Peak expiratory flow rate, Wood dust*

ID 354

Comparative Evaluation of Disc Diffusion eMasurements with Minimum Inhibitory Concentration values in Meropenem Susceptibility of Enterobacteriaceae Isolates

SS Denagamagei[1,2#], T Senaratne[3], AWGSN Jayathilaka[3], and D Nakkawita[4]

[1]Edinburgh Napier University, Edinburgh, Scotland, United Kingdom
[2]Faculty of Life Sciences, Spectrum Institute of Science and Technology, Colombo, Sri Lanka
[3]Faculty of Allied Health Sciences, General Sir John Kotelawala Defence University, Werahera, Sri Lanka
[4]Faculty of Medicine, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka

[#]sshehanad@gmail.com

Abstract

Meropenem is a broad-spectrum antibiotic used to treat resistant bacterial infections. Disc diffusion testing is the routine method used for antibiotic sensitivity. Knowledge on Minimum Inhibitory Concentration (MIC) of sensitive and resistant isolates is important in treatment decisions and predicting the future usefulness of the drug. The study aimed to determine the most effective susceptibility test for meropenem against Enterobacteriaceae by comparing MIC values from Epsilometer test (E test) with disc diffusion test. Sixty isolates resistant to first line antibiotics from patient clinical specimens were collected. Meropenem sensitivity was tested and read using disc diffusion method according to Cinical Laboratory Standards Institute 2022 standards and MIC was determined using E test strips. Data demonstrated a normal distribution (p=0.32) where 51.7% of total samples (n=31) reported as resistant and 48.3% of total samples (n=29) reported as sensitive for both test approaches. MIC of sensitive samples was in 0.016 - 1μg/ml range and the interpreted results were correlated with disc diffusion measurement results. No statistical difference in results was observed between two test methods (p=0.34). However, MIC values of 46.7% was not detected by E test suggesting their MIC values lie beyond the E strip range (0.002 - 32μg/ml). A significant correlation (p=0) and a perfect agreement (κ=1) between E test and disc diffusion methods were reported indicating susceptibility interpreted from the two test approaches were compatible. In conclusion, both approaches were effective susceptibility tests of meropenem for Enterobacteriaceae isolates.

Keywords: *E test, Disc diffusion, Meropenem.*

ID 356

Microscopic Identification of Gastrointestinal Parasitic Infections; Incidence among Selected Communities in Western Province and Central Province

SP Diyunugala[1#], US Kulasekara[1], PH Premaratne[1], W Abeywickrema[1], KO Bandaranayaka[2], GDI Rodrigo[1], and P Jayasekera[1]

[1]Faculty of Medicine, Sir John Kotelawala Defence University, Rathmalana, Sri Lanka
[2]Faculty of Natural Sciences, Open University, Nawala, Sri Lanka

[#]salz.diyu@gmail.com

Abstract

Gastrointestinal (GI) parasitic infections prevail to be a significant health problem in many countries. Communities with low socioeconomic status, poor environmental and personal hygiene, overcrowding, and insufficient access to clean water are at higher risk. This study was conducted to determine the incidence of GI parasites in selected communities in Western province and Central Province using standard microscopy based diagnostic techniques. A cross-sectional study was carried out on people (3 -70 years old) living in selected areas in the Western and Central Provinces from January 2022 to February 2023. Faecal samples were collected and analysed using direct iodine and saline wet smears, Sheathers' sucrose and salt floatation methods, and Trichrome stain. Altogether 193 (females 54.9%) samples were analysed. Of these 25.9%, 30.1% and 44.0% samples from Colombo, Kalutara and Kandy districts respectively. The majority (64.3%) of the samples were from volunteers <19 years of age. Among the participants, 67.9% were living in estate communities, 10.9% were from low-income and poor sanitary areas and 19.2% of samples were from in-ward patients of a tertiary care hospital in Western province. Only one (0.5%) sample was found positive for enterobiasis. All the other samples were negative for *Ascaris lumbricoides, Necator americanus, Trichuris trichiura, Enterobius vermicularis, Giardia intestinalis, and Entamoeba histolytica.* The study indicates that the incidence of GI parasitic Infections is extremely rare in high-risk communities in the Western and Central provinces of Sri Lanka. It is recommended to further analyse the same samples using more sensitive molecular based diagnostic methods.

Keywords: *Gastro-Intestinal parasitic Infections, Microscopy based diagnostic techniques*

ID 378

Bioequivalence of Metformin Hydrochloride USP XR 500 mg (Generic, Gamma Interpharm Pvt Ltd,) and the Comparator Glucophage XR 500 mg Oral Tablets (Merck Sante S A S, France), in Sri Lankan Healthy Subjects Under Fasting Conditions

RD Piyathilaka[1], P Jayasekara[2], J Munasinghe[2], US Kulasekara[2], DGP Kawyangana[2], PM Athauda-arachchi[2], D Govindapala[2], HS Jayasinghearachchi[1], and R Fernandopulle[2#]

[1]Institute for Combinatorial Advance Research and Education, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka

[2]Faculty of Medicine, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka

[#]rohinifernandopulle@gmail.com

Abstract

The World Health Organization (WHO) requires bioequivalence studies to evaluate if medication from various sources are therapeutically equivalent to the innovator product. In this study, the bioequivalence of generic metformin hydrochloride XR 500 mg (Gamma Interpharm Ltd) was compared to the innovator, glucophage XR 500 mg (Merck Sante S A S, France). This study was a randomized, two- treatment, two-period, two-sequence, open-label, single-dose, with crossover design, under fasting conditions, with a one-week washout, in twenty (20) healthy Sri Lankans. Seventeen blood samples were collected at time points (0, 1, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 7 , 8, 10, 12, 16, 24 h) post-oral-dose of 500 mg x2. Metformin plasma levels were assessed with validated Reverse-Phase High-Performance Liquid Chromatography UV spectrophotometry. The mobile phase was acetonitrile and phosphate buffer 20 mM (KH_2PO_4) in a 50:50 (v/v) ratio. Metformin and internal standard, ranitidine, were detected at 230 nm. Pharmacokinetic parameters Cmax (maximum plasma concentration), Tmax (time to reach Cmax), the area under the plasma concentration-time curve (AUC 0-infinity), and area under the plasma concentration-time curve from 0 to last measurable concentration (AUC 0-t) were analyzed statistically using PKMP (version 1.05, 2017, APL, USA). The 90% confidence intervals for Cmax, Tmax, AUC0-infinitive, and AUC 0-t (test/reference) were 97.97% - 103.89%, 99.45% - 105.37%, 94.42 - 108.38%, and 97.16% - 108.65% respectively. These were within the acceptable range (80-120%), indicating that the extent and rate of absorption of the two formulations did not differ significantly. Therefore, they can be considered therapeutically interchangeable (i.e. bioequivalent) in clinical practice.

Keywords: *Bioequivalence, Metformin Hydrochloride USP, Sri Lankan healthy subjects*

ID 383

Knowledge, Attitude and Practices with regard to the Use of Facemasks in the Prevention of Covid-19 and Other Respiratory Illnesses Among General Public in Sri Lanka

OSM Perera[1#], MH Sally[1], HAK Ranasinghe[2], and AI Abeykoon[3]

[1]Management & Science University, Shah Alam, Malaysia
[2]Faculty of Science, University of Kelaniya, Kelaniya, Sri Lanka
[3]Faculty of Medicine, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka

[#]shehanperera828@gmail.com

Abstract

This study focuses on evaluating the knowledge, attitudes, and practices (KAP) of the general population in Sri Lanka regarding the use of face masks for COVID-19 prevention. The research was conducted through an online survey from March 2021 to January 2022, involving 157 voluntary participants with majority being females (59.9%). The survey assessed socio-demographic factors, knowledge, attitudes, and practices related to face mask usage. The study revealed that the majority of participants (87.9%) strongly agreed on the necessity of wearing face masks during the COVID-19 pandemic, indicating a positive attitude towards face mask mandates in Sri Lanka. Most respondents demonstrated a high level of knowledge (61.1%) regarding face mask usage. Majority (65.0%) of the responders demonstrated a good attitude towards face mask usage. Regarding practices, the majority exhibited moderate adherence (53.5%) to face mask usage. The general public in Sri Lanka demonstrates reasonably positive knowledge, attitudes, and practices regarding face mask usage for COVID-19 prevention. However, a significant proportion (78.3%, n=123) reported never using face masks for preventing respiratory infections prior to the COVID-19 pandemic. It highlights the need for comprehensive education emphasizing the importance of face masks in preventing respiratory infections. It is worth noting that while considerable data is available on knowledge, attitudes, and practices regarding COVID-19 among specific occupations in Sri Lanka, limited information is available on these aspects of the general public. Thus, this study attempts to address this void of evaluating understanding, attitude, and behaviour of the general public, related to the use of a face mask.

Keywords: *COVID-19, Face masks, Online survey, Knowledge-Attitudes-Practices, Respiratory infections*

ID 444

Psychosocial Climate of the Sri Lanka Army in Relation to Burnout Prevention: A Qualitative Study

PASD Jothipala[1#], S Semage[1], T Agampodi[2], and A Balasuriya[3]

[1]Sri Lanka Army Health Services, Werahara, Sri Lanka
[2]Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka, Saliyapura, Sri Lanka
[3]Faculty of Medicine, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka

[#]dr.balasuriya@yahoo.com

Abstract

Burnout is one of the most prevalent occupational mental health problems in military. Stressors are influenced by the psychosocial environment at work. Understanding the psychosocial environment is crucial in planning policies for prevention of burnout. The objective of this study is to describe the prevailing organizational psychosocial climate related to burnout in Sri Lanka Army. We conducted a qualitative study using in-depth interviews. Senior Army officers who have at least thirty years of military experience familiar with the psychosocial atmosphere were purposely selected. The interview guide was built using the Psychosocial Safety Climate framework. The data analysis employed inductive thematic analysis. At the theoretical saturation, sixteen participants were interviewed. We identified seven major themes; the importance of leadership, the importance of cohesion, the role of senior Non- Commissioned officers (NCOs), training and carrier development, identification of psychological issues, welfare and financial mismanagement, and preventive mental health services. Attitudes of leadership were important and problematic behaviors of leadership created a non-hosting atmosphere for mental well-being. The time- trend issues in the army affected the leadership as well as cohesion. The weakening of the role of NCOs downgraded the psychosocial climate. The participants claimed the need to change the recruitment and training as well as the detection of psychosocial issues. The current salaries, financial mismanagement and suboptimal welfare influenced distress. Targeted preventive mental health promotion was a suggestion. Existing psychosocial climate in the army assimilates vulnerability and leads to developing burnout. Early attention and proper action along identified themes is strongly recommended.

Keywords: *Burnout, Sri Lanka army, Psycho-social climate*

ID 495

Diagnostic Utility of Ultrasound Scanning in the Preoperative Diagnosis of Thyroid Nodules

KMHH Kulatunga[1], AA Pathirana[2], SSN Fernando[2], BD Gamage[2], A Epa[3], MKA Sampath[4], C Sosai[5], and BS Senevirathna[2#]

[1]Faculty of Health Sciences, KAATSU International University, Battaramulla, Sri Lanka
[2]Faculty of Medical Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka
[3]Colombo South Teaching Hospital, Kalubowila, Sri Lanka
[4]Faculty of Allied Health Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka
[5]Colombo South Teaching Hospital, Kalubowila, Sri Lanka

[#]bimalka@sjp.ac.lk

Abstract

A 2.1-fold increase in the rate of thyroid carcinoma is observed in Sri Lanka during the past decade. Despite high incidence of thyroid tumors (7% of the population), malignancy rate was 5%. Effective methods of preoperative diagnosis are crucial for effective patient management. A descriptive cross-sectional study was conducted to evaluate the diagnostic utility of Ultrasound Scan (USS) in the preoperative diagnosis of thyroid tumors. The study enrolled 108 patients with radiologically suspected malignant nodules. USS findings were reported according to the Thyroid Imaging Reporting and Data System (TIRADS), and the results were compared with the final histological diagnosis. Among the 108 participants, the majority were females (78%), and their ages ranged from 15 to 75 years, with a mean age of 47.5. Histology results were available for only 35 individuals, with 77.14% (27 cases) confirmed as malignant. In the 27 histologically confirmed malignant cases, there were fourteen (n=14) reported as 4c, three (n=3) as five. TIRADS system shows a moderate, positive and insignificant correlation ($p>0.05$) when compared with histology results. Based on the findings, TIRADS system proved to have a 50% specificity and thus additional investigations are required for further preoperative diagnosis.

Keywords: *Thyroid Imaging Reporting and Data System, Thyroid ultrasound scan, Thyroid malignancy*

ID 590

Evaluation of the Results of *In-vitro* Primary Antimicrobial Susceptibility Testing for Positive Blood Cultures with *Enterobacteriaceae* According to Clinical Laboratory Testing Standards Institute ABST Guidelines

MVAP de Silva[1], MKT Nimeshi[1], EADK Wathsala[1], HWAD Premathilaka[1], ICMD Mishel[1], LH Walpola[1#], and K. Jayatilleke[2,3]

[1]KAATSU International University, Battaramulla, Sri Lanka
[2]Sri Jayewardenepura General Hospital, Sri Jayewardenepura, Sri Lanka
[3]Faculty of Medicine, University of Sri Jayewardenepura, Nugegoda, Sri Lanka

[#]hasanthika@kiu.ac.lk

Abstract

Antimicrobial Susceptibility Testing (ABST) is used to determine the effectiveness of different antibiotics against specific bacteria or microorganisms. The main objectives of this study were to determine the antimicrobial susceptibility of Enterobacteriaceae isolated from blood cultures of tertiary care hospitals and to compare the proper ABST results with the primary ABST results of the blood cultures for different antibiotics in the disk diffusion method. A descriptive cross-sectional study was conducted among patients with positive blood cultures with Enterobacteriaceae at Sri Jayewardenepura General Hospital. A total number of 34 samples were collected within a period from 09^{th} of March to 09^{th} of April 2023 and both primary and proper ABST were conducted. Statistical Package for Social Sciences version 25 software and World Health Organisation network 2023 software were used for the analysis of the study and evaluation of results. According to the primary results, Enterobacteriaceae from positive blood cultures were highly resistant to amoxicillin / clavulanic acid (susceptibility-32.4%), cefotaxime (susceptibility-32.4%), amikacin (susceptibility-23.5%), gentamicin (susceptibility-32.4%), cefuroxime (susceptibility-17.6%), ciprofloxacin (susceptibility-8.8 %) and piperacillin/tazobactam (susceptibility-29.4%). Highest sensitivity in Enterobacteriaceae from the positive blood cultures were for meropenem (susceptibility-67.6%). Co-trimoxazole (susceptibility-58.8%) and netilmicin (susceptibility-52.9%) showed remarkable susceptibility. Comparison of primary and proper ABST demarcated that few isolates with all antibiotics had major errors in results, i.e., resistant, and susceptible. Meropenem had the highest rate of susceptibility of all antibiotics. Most Enterobactericiae isolates showed no major errors in primary and proper ABST test results in Enterobacteriaceae in blood cultures.

Keywords: *In-vitro, Antibiotic sensitivity testing, Enterobacteriaceae, Clinical Laboratory Testing Standards Institute, Disk diffusion method, Blood culture*