出國報告（國際會議）

第 32 屆世界醫檢科學學術大會 報告

服務機關：台北榮民總醫院
姓名職稱：范秀琴主任等 12 人
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摘要

世界醫檢科學學術大會(World Congress of Biomedical Laboratory Science - 2016 IFBLS)每兩年舉行包含臨床醫學實驗室中的血液、生化、尿液、微生物、病理等等不同的領域，為醫學檢驗學術的一大盛事，從表演的安排以及日本皇室的蒞臨都可以感受到主辦單位對於本次會議的用心及重視，充分展現了日本賓至如歸的服務文化；而本次會議主題的重點為尿沉渣與臨床 MALDI-TOF 之運用，本部長期致力於尿沉渣鏡檢的相關發表研究、參與醫檢學會尿沉渣指引的建立，真正落實於臨床，MALDI-TOF 也廣泛運用於目前臨床微生物上之鑑定，在本次會議中發表了包含三篇尿沉渣鏡檢與一篇 MALDI-TOF 相關研究共 13 篇互動壁報與口頭論文發表，為全台之冠。藉由參加本次國際會議獲取新知、進行交流，有助於提升臨床檢驗品質。

關鍵字：醫檢科學學術大會、尿沉渣、MALDI-TOF、學術交流

本文

一、 目的

藉由參加世界醫檢科學學術國際會議，了解世界各國在檢驗方面的發展與突破，並與來自世界各地醫學檢驗方面不同領域的專家、學者進行交流，將此經驗落實於臨床檢驗工作、提升臨床檢驗品質。

二、 過程

為期 5 天(8/31~9/4)的「2016 第 32 屆世界醫檢科學學術大會(The 32nd World Congress of Biomedical Laboratory Science)」(附錄一)在日本神戶的 Kobe Portopia Hotel 以藝妓表演、祝酒飲用儀式及劍玉表演，熱鬧且盛大的揭開了序幕，這次大會會場分別在 Kobe Portopia Hotel、Kobe International Exhibition Hall 及 Kobe International Conference Center，舉行了包括臨床血液、生化、尿液、微生物、病理等等多種不同領域的 Keynote speech、Special lecture 及 Symposium 等演講，本部這次參與人員有范秀琴主任、詹宇鈞主任、林純娟、蔡慧思、林淑雯、李雅清、王方妤、陳依妘、王晏莉、吳易企、李嘉凌、陳亞芬等 12 人，是除了主辦國日本以外的最大醫院代表國。

Keynote speech 邀請到 2002 年諾貝爾化學獎得主：田中耕一 (Koichi Tanaka)(附錄二)前來演講「Application of Mass Spectrometry in Laboratory Medicine」，被譽

為 MALDI-TOF 之父的他，分享 MALDI-TOF 的演進歷史及介紹了目前運用於臨床的 MALDI-TOF 種類，而本部目前所使用快速鑑定細菌的 MALDI-TOF 即是田中耕一當年所發明；Special lecture 的其中一堂課是邀請台灣醫事檢驗學會『尿沉渣鏡檢指引』主編，同時也是台大醫院檢驗醫學部朱蘇煜博士，分享「Bridging the gap between Clinical Medicines and Laboratory Medicine on the Urine Sediment Microscopy」，同時也宣告該指引在台灣的啟用。過去，日本與台灣同為世界高慢性腎病盛行率的國家，但透過許多方法策略，已大大降低慢性腎病盛行率，其中一項方法，就是提升尿液常規中尿沉渣的報告品質，增加與腎病有極大相關的腎小管上皮細胞等報告內容。『尿沉渣鏡檢指引』是由國內三大龍頭醫院，臺大、北榮、林口長庚的專家共同討論、建置，召集人為本部一般檢驗科范秀琴主任，因此在指引建置的過程中，本部提供需多相關的臨床經驗與協助，目前更是領先國內絕大多數實驗室實施指引。此外，在指引建置的過程中，我們也獲得許多來自日本「一般社團法人日本臨床衛生檢查技師會(JAMT)」的經驗分享與相關教育，因此在這次由 JAMT 主辦的 IFBLS 會議中，我們得以分享台灣經驗；而 Symposium 課程有一重點在討論 Point-of-care tests(POCT)在臨床上的運用，台灣醫檢學會謝文祥理事長的「Explore the Possibility of POCT」簡單扼要的說明了 POCT 運用於急診及 ICU 等緊急單位，以及這類的床邊照護檢驗與臨床醫學實驗室之間該如何互相調配，才能夠讓臨床病人照護獲得最大的益處。

這次參加 IFBLS 國際會議的主要重點為壁報展示，臺灣方面參與投稿非常踴躍，發表的海報論文數共計 112 篇，僅次於主辦國日本的 323 篇(海報論文總數為 511 篇)。本部這次共計發表 12 篇海報論文及 1 篇口頭論文(附錄三)，發表主題包括血液鏡檢、尿液鏡檢及微生物等領域，其中血液鏡檢的發表著重於建立完善的體液報告核發流程和臨床血液抹片閱片規則，讓醫檢師們所發出的報告能提供臨床上更豐富、更有用的資訊給醫師；尿液鏡檢方面，於尿沉渣 Renal tubular epicedial cell(RTE)鏡檢能力的提升以及臨床特殊案例分享；微生物方面發表了 RVP 新分子檢驗套組與傳統病毒培養方法進行比較，提高呼吸道病毒檢出率，以及 1 篇利用 MALDI-TOF 有效鑑別 toxigenic/non-toxigenic C. difficile 的口頭論文。

另外，這次行程中也參訪了檢驗儀器製造商 Sysmex 位於神戶的 i-square 工廠(附錄四)，i-square 是一棟相當有特色的綠建築，該公司主要製造檢驗血液、血凝及尿液的儀器，生產線上的員工主要為女性家庭主婦為主，日本 Sysmex 公司

為了要使家庭主婦也能夠勝任組裝複雜且精密的檢驗儀器，特別設計了一套即時監控系統並將 SOP 做成簡單明瞭的動畫，以及為了能夠讓每個出口貨櫃的空間利用能夠最大化，也有專門規畫貨物如何擺放的程式軟體，再再顯示了日本人做事縝密的專業態度，值得我們學習。

三、 心得

這次的「2016 第 32 屆世界醫檢科學學術大會(The 32nd World Congress of Biomedical Laboratory Science)」於開幕典禮中邀請到日本皇室秋筱宮文仁親王及文仁親王妃紀子蒞臨，並安排了各式各樣具有濃濃日本味的傳統表演節目，讓與會的來賓體驗日本的特色，甚至還安排了與會外國人機場快速通關的優待，展現了日本賓至如歸的服務文化，深切感受到主辦單位對於這次國際會議的重視及用心。

這次台灣方面除了投稿非常踴躍以外，由 26 位專家評審委員選出優良海報共計 10 篇，台灣也榮獲 3 篇；可以藉由這種參觀來自世界各國的壁報，互相交流臨床知識，吸收來自國內外的學者、研究專家所探討的新知，學習到其他人在研究上的思維及問題討論的細膩程度，還有海報呈現的方式，受益良多。

在會議的國際品牌展示區當中，展示了各大廠牌的檢驗儀器及試劑，裡面包含了我們醫院現在所使用的產品及儀器，發現本院在國際上所使用的儀器及商品都是走在最前端的，再度體會到台灣的醫療品質仍然在國際水準之上，也體會到各種種類的檢驗儀器日新月異，像是檢驗這數十年來從手工法演變成精密的儀器分析，如同我們檢驗人員也必須不斷精益求精，若停滯不前可能無法與之接軌而被淘汰，故參加國際會議與世界接軌，檢視我們有何待加強的地方或是可引進國內的技術及新知，讓我們更加進步。

四、 建議事項

藉由參加本次的國際會議，不論是學術方面的新知抑或是文化方面的交流都有很大的收穫，更透過交流發現本部有許多表現優於國際平均水平，因此建議能夠提供更多外派參加國際學術會議的機會，讓更多同仁能獲取新知，提升本部研究發展的能力，更讓世界上更多的檢驗實驗室認識我們台北榮民總醫院。

附錄

附錄一、IFBLS大會手冊 - IFBLS簡介

About IFBLS

IFBLS is a global organization working to increase opportunities for development of laboratory professionals through education and partnership.

A biennial Congress provides networking opportunities in an education forum, while electronic communication facilitates and enhances professional development.

The objectives of IFBLS are:

- To support, advance and promote good laboratory practice through the development and adherence to high quality standards in diverse environments throughout the world.
- To support, advance and promote the education, training and professional development of Biomedical Laboratory Scientists and Technologists.
- To support, advance and promote ethical and professional values in the biomedical laboratory profession.
- To promote the exchange of ideas and the active participation of biomedical laboratory professionals through seminars, research and educational forums.
- To promote the coordination of activities within the healthcare and biomedical laboratory professions, through the development of international partnerships and programs.
- To support, promote and advance such activities of the Corporation as are incidental and ancillary to the foregoing objects.

IFBLS promotes Good Laboratory Practice (GLP) through quality standards in diverse environments.

附錄二、Keynote speech - 2002年諾貝爾化學獎得主田中耕一(Koichi Tanaka)

Invited Speakers

Keynote Speaker

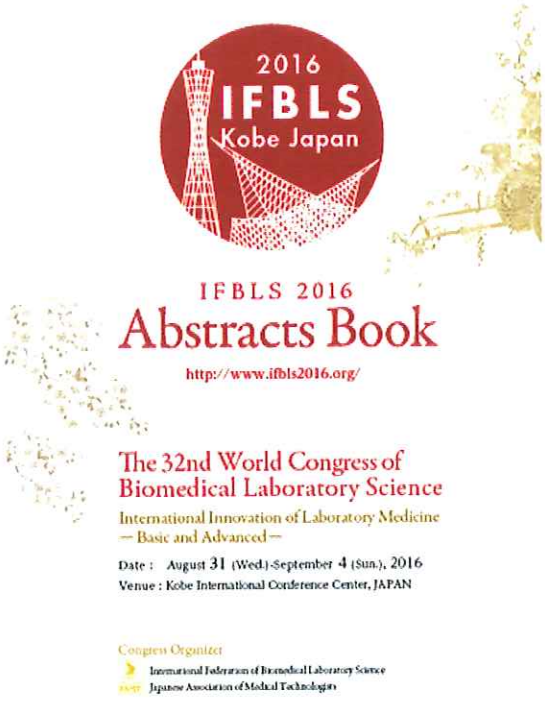
Koichi Tanaka
Shimadzu Corporation, Japan
KS Applications of Mass Spectrometry in Laboratory Medicine

Dr. Koichi Tanaka was awarded the Nobel Prize in Chemistry in 2002, for developing mass spectrometric analyses of biological macromolecules utilizing soft lasers. He is also recognized for his distinguished services in the field of culture, and is a recipient of the Order of Cultural Merit.
Dr. Tanaka will deliver the keynote speech at this year's World Congress. He is currently working on the practical application of technology for the "early detection of disease using a single drop of blood."
Dr. Tanaka is a Senior Fellow at Shimadzu Corporation and the head of Koichi Tanaka Mass Spectrometry Research Laboratory, as well as the head of the Koichi Tanaka Laboratory of Advanced Science and Technology.

Abstract

Laboratory medicine commonly requires analytical instruments that can quickly, easily, and inexpensively identify compounds and their forms associated with diseases with the highest sensitivity, quantitative performance, and specificity using minimally invasive techniques. Advancements in technical innovation for mass spectrometers (MS) have now led to techniques that meet such requirements. Besides identifying known substances, other purposes and advantages of MS that are not well known to the public include using MS as a tool to discover unknown phenomena and compounds. An example is clarifying the mechanisms of human diseases. The human body has approximately 100 thousand types of proteins, and there may be more than 10 million types of post-translationally modified proteins and their metabolites. Most of them have yet to be discovered and their discovery may give birth to new academic fields and lead to a better understanding of diseases, development of new drugs, and other advancements. For example, using the MS system developed under "Contribution to drug discovery and diagnosis by next generation of advanced mass spectrometry system," one of the 30 projects funded by the "Funding Program for World-Leading Innovative R&D on Science and Technology" (FIRST program), and using other individual elemental and basic technologies, we succeeded in discovering new disease biomarker candidates, such as for Alzheimer's disease and cancers. Further contributions by MS to laboratory medicine can be expected through the development and improvement of new techniques, efforts to verify discoveries, and through multidisciplinary communication, especially with researchers and engineers directly involved in using instruments for medical applications.

附錄三、壁報及口頭發表論文



3-1、范秀琴主任壁報論文

PC-21 **Refining reporting results of body fluid analysis for clinical purpose Commenting summarization of significant results for reporting results to highline**

Hsiu-Chin Fan, Fang-Yu Wang, Ya-Ching Li, Pei-Chen Li, Chun-Chuan Lin
Department of Pathology and Laboratory Medicine, Taipei Veterans General Hospital, Taipei, Taiwan

The intended purpose of body fluid cellular analysis is for the characterization of inflammatory, infectious, neoplastic, and immune alterations. However the equivocal reference intervals of cellular constitute acquire much more difficulty for clinicians to diagnosis. Despite limited clinical usefulness, body fluid analysis brings about tedious workloads for testing personnel in hematology laboratories. This study is aimed to develop solutions to enhance its clinical purpose and to ease off a little cumbrance for testing personnel.
The 622 cases for body fluid analysis were collected in March 2016, of which 65 cases were traumatic taps. 157 cases with nucleated cell count beyond reference intervals comprised 13 CSF, 93 ascites, 23 Pleural fluids and 28 synovial fluids. 29 cases with atypical cells (suspected neoplastic cell) comprised 2 CSF, 7 ascites and 10 Pleural fluids. 13 cases with microorganisms consist of 10 ascites and 3 Pleural fluids. It shows that the most frequency causes of ascites and Pleural fluids are infection and malignant disease. Besides, it was found the cases with crystals and microorganisms have strong associations with neutrophil predominant finding. To improve clinical usefulness, we decide to amend the report format by adding texted messages of commenting as necessity which summarize significant results from each specimen, while the messages directly reveal the relevant characterization of pathology cause. Cell categories are redefined based on the origin cells derived from and on their clear distinguish of morphology, which make easier to perform cell differential. The criteria are set for each type of specimen if using chamber differential is adequate to decrease reductant workloads.
Conclusion: Commenting summarization of significant results is helpful to medical review, and for pleural fluids and ascites, when nucleated cell numeration is under 0.5×10^9/L, the chamber counting for differential is adequate for rule out bacterial infection.

3-2、詹宇鈞主任壁報論文

PA-14 Comparison of the Accuracy of Vitek MS and Conventional Vitek 2 System with DNA Sequencing Analysis in the Identification of Clinical Candida Isolates Collected from Sterile Body Sites

Yu Jiun Chan[1,2], Ping Feng Wu[1], Su Pen Yang[1], Mei Lin Lin[1], Yi Chi Wu[1], Fu Der Wang[1], Yu Fan Juan[1]

1 Taipei Veterans General Hospital, Taiwan
2 National Yang Ming University

Background: Matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF MS) system may become a fast and reliable tool for rapid fungal identification in routine clinical laboratories. The aim of this study was to evaluate the efficacy of Vitek MS in the identification of clinical isolates of Candida species cultured from blood or sterile body sites from the patients in a major teaching hospital of northern Taiwan.

Material/methods: Fifty-nine clinical isolates were analyzed by Vitek-2, Vitek MSTM and internal transcriber spacer 1 (ITS1) rDNA sequencing. The efficacy of the Vitek MS was determined by comparison with Vitek 2 and ITS1 rDNA sequencing analyses.

Results: According to the results of ITS1 rDNA sequencing analyses, the 59 isolates were the followings: 11 isolates of C. albicans, 10 C. tropicalis, 12 C. parapsilosis, 10 C. glabrata, 4 C. krusei, 5 C. guilliermondii, 2 C. lusitaniae, 2 C. intermedia, 1 C. rugosa, 1 C. pararugosa and 1 C. haemulonii. By using the gene sequencing as the reference method, the correct species identification rates for Vitek MS and Vitek 2 were both 91.5% (54/59). The only isolate of C. pararugosa was misidentified by Vitek 2 and unidentified by Vitek MS system. The other 4 Vitek 2 misidentified isolates were correctly identified by Vitek MS, and the other 4 Vitek MS unidentified isolates were correctly identified by Vitek 2.

Conclusions: In conclusion, the Vitek MS system is comparable to Vitek 2 in the identification of clinically important isolates of Candida species.

3-3、林純娟壁報論文

PC-25 Guides for manual estimation of blood slide review Developing algorithms to decide revising of automated CBC and WBC differentia results based on manual review

Chun-Chuan Lin, Ya-Ching Li, Fang-Yu Wang, Li-Ping Yin, Hsiu-Chin Fan

Department of Pathology and Laboratory Medicine, Taipei Veterans General Hospital, Taipei, Taiwan

The criteria for action following automated haematology analysis had been suggested by experts for a decade, which help to improve uniformity of automation applications among laboratories. However for those arrested results need slide reviews, there is no detailed instruction provided for reviewers, laboratories are incline to mandate reviewers to report or even revise instrument results based on their own experience. It makes the slide review incapable to ensure the consistency of review reporting, neither guarantee for the more accurate. The study is aimed to enhance the consistency of manual reporting by setting guides for reviewers.
The 6,938 cases of the arrested results were collected on day shifts in a period of two weeks, of which it was found the results of 1,238 cases had been revised. The 1,083 revised cases were inevitable because of interference, no DCs from instrument, and immature cells finding, however the other 155 revised cases of DC resulted from incomparable DC between instrument count and reviewers' numeration. What make reviewers identify incomparability? The answers from reviewers were diversity which really needed algorithms to mitigate.
After analysis the algorithms for decision making process were drafted, which triggered by serious of morphology flags. A newly purchased haematology analyser other than primary automation is also incorporate into this process as a confirm system for blast, NRBC, PLT clumps. Random revision of DC is not allowed owing to unreliability of variant smear preparations and limited cells counted. The protocol for manual numeration of PLT is established through meticulous calculations and experiments, although arbitrarily using manual numeration of PLT to replace the instrument results is not allowable, but using delta checking as criterion for replacement is encouraged. After all done, the reviewers are more clearly to understand the limitation of slide review and either comfortable to define the necessity for revisions.

3-4、蔡慧思壁報論文

PH-01 Phagocytosis Phenomenon in Urinary Tract of a Poor-Glycemic Control Patient A Case Report and Survey

Hui-Szu Tsai, Chuan-Po Lee, Ya-Chin Li, Hsiu-Chin Fan

Department of Pathology and Laboratory Medicine, Taipei Veterans General Hospital, Taiwan

A 73-year-old man with previous medical history of hypertension, hyperlipidemia, type II DM sent to the emergency department due to general muscle weakness and drowsy consciousness for one day after head collided in bicycle accident. After examinations, he was finally diagnosed as acute right centrum semionale infarction, urinary tract infection (UTI) and chronic kidney disease (CKD). The biochemistry data were glucose 434 mg/dl, BUN 19 mg/dl, creatinine 1.53 mg/dl, eGFR 45 ml/min/1.73 m^2, Na 138 mmole/L, K 3.4 mmole/L and CRP 3.01 mg/dl without any viral infection tests. The urinalysis data were glucose 1.0 g/dl, OB 3+, protein 30 mg/dl, nitrite +, leukocyte esterase 2+, RBC 11-20/HPF, WBC 1+/HPF, atypical cell 0-2/HPF, renal tubular cell 0-2/HPF and bacteria many as normal floral cultured. Those atypical cells refered to cytoplasmic inclusion body bearing cells or phagocytosing cells that were seen in almost every HPF. Meanwhile there were 219 cases of cytoplasmic inclusion body in 11,958 urinalysis specimens (OPD 6,741, IPD 3,454, ER 1,763) we reviewed within 30 days. The average present rate is 1.83% which is higher in ER specimens 2.78% and that is highly relative to protein, OB/RBC, nitrite, leukocyte esterase/WBC, bacteria/yeast ($P < 0.001$). Analyzing the 219 cases versus the results of urinalysis, positive rate of OB/RBC, leukocyte esterase/WBC, bacteria are 79.5%, 80.8% and 63.5%. The survey reveals the presence of cytoplasmic inclusion body is relative to urinary tract bleeding or immune activity though viral infection is thought as the main reason. DM and CKD patients are immunocompromised and have high risk to infection. The muddling immune status in urinary tract of this subject patient formed numerous cytoplasmic inclusion body bearing cells or phagocytosing cells. We present this case to highlight that the presence of cytoplasmic inclusion body is much useful in diagnosis of urinary tract diseases.

3-5、蔡慧思壁報論文

PH-02 Quality Improvement of Image-Based Automatic Urinalysis A Two-PDCA-Cycle Experience

Hui-Szu Tsai, Sheng-Hsiu Wei, Chuan-Po Lee, Ya-Chin Li

Department of Pathology and Laboratory Medicine, Taipei Veterans General Hospital, Taiwan

Since microscopic examination of urine sediment is labor-intensive, time-consuming, and has wide inter-observer variability, two image-based automatic analyzers [USCANNER(E), TOYOBO] and auto-verification using 8 rules were introduced to our laboratory in February 2014. The 8 intercept rules were OB > 1+, LEU > 1+, cast > 1-2/LPF, crystal > 0-5/LPF, renal tubular epithelial cell > 1/HPF, urothelial cell > 1/HPF, OB -/RBC > 3-5/HPF, and LEU -/WBC > 6-10/HPF. In this phase, we performed 199,532 specimens (OPD 135,159, IPD 64,373) with 2.5 staff (3 ones in 2013). The complete rate of OPD/IPD specimens in 30 min-TAT, 60 min-TAT, 120 min-TAT were 70.1%/76.5%, 96.3%/96.7%, 99.7%/99.8% that were comparable to the performance of 2013. But the reports didn't include the findings of renal tubular cell (RTE), urothelial cell (URO), inclusion body or oval fat body (OFB) until January 2015 formally. After one-year-training, the second phase, those cells were reported with manual microscope confirmed and meanwhile the specimens from emergency department (ED) were transferred to the identical system. In 2015, we had 201,735 specimens (OPD 115,268, IPD 59,941, ED 26,526) and reported RTE 16,330 cases (8.09%), URO 6,377cases (3.16%), inclusion body 3,695 cases (1.83%), OFB 1,097 cases (0.54%). Besides, the complete rate of OPD/IPD/ER specimens in 30 min-TAT, 60-min TAT, 120 min-TAT were 80.2%/85.7%/97.8%, 99.4%/98.5%/100%, 100%/100%/100% that were even better than those in 2014 and in accordance with the CLSI GP16-A3 or European Urinalysis Guideline. The auto-verification rate in specimens of OPD, IPD, ED are 54.4%, 52.1%, 32.8%. We also found the sensitivity, specificity, positive predict value, negative predict value of the analyzer in RTE are 96.4%, 81.0%, 30.9%, 99.6% that RTE is closely relative to the renal function. With such examination system and improvements, we not only save the manpower but also have enough time to identify more cells in order to achieve better quality and provide more valuable clinical information.

3-6、林淑雯壁報論文

PD-24 Analysis for Stat Biochemistry Laboratory Specimen Rejection Rate
Improvement of Patient Safety and Patient Care Quality

Shu-Wen Lin, Ya-Ching Li, Fang-Yu Wang

Department of Pathology and Laboratory Medicine, Taipei Veterans General Hospital, Taiwan, ROC, Taiwan

Physicians rely on accurate laboratory test results for proper disease diagnosis and for guiding therapy. During laboratory practice, error rates for preanalytic performance measures were about 46 to 68.2%. When the quality of a blood specimen is poor, it cannot be processed by the laboratory. This leads to a second request for blood specimen and therefore lead to an increased turnaround time for the laboratory, which is positively correlated with the delay in diagnosis. Specimen rejection rate is one of the important quality indicators for laboratory quality and patient safety. Programs to track laboratory quality have reported aggregated specimen rejection rates ranging from 0.30% to 0.83%. However, specimen rejection rate of stat biochemistry lab in our hospital was 1.06%, 7 times higher than general biochemistry workstation which was 0.15%. We based on reason records of specimen rejection in LIS system, to analyze specimen rejection rate and reasons from January to December in 2015. The result shows rejection volume was 4,227, total sample volume was 398,241, and the average rejection rate was 1.06% (minimum 0.88%; maximun 1.35%). Top three reasons for specimen rejection rate were severe hemolysis (74%), insufficient specimen (13%), and specimen contamination (4%). Statistics differences of hemolysis interpretation between personnel of stat lab, we found that total volume of hemolysis was 2,475, the minimum volume was 432 (17.5%), the highest volume was 552 (22.3%). We also analyzed sites of specimen collection, our data indicated that specimen collected by nursing staffs in ED had highest volume of hemolysis specimen. According to our findings, we can further communicate with nursing staff in ED, provide specimen collection notices, and improve consistency of colleague's interpretation of hemolysis, in order to reduce specimen rejection rate of stat biochemistry lab.

3-7、李雅清壁報論文

PM-21 Set up and improve the monitoring mechanism of specimens transport
Clarify the key points of specimens loss

Ya-Ching Li, Shu-Wen Lin, Chuan-Po Lee, Hsiu-Chin Fan

Department of Pathology and Laboratory Medicine, Taipei Veterans General Hospital, Taipei, Taiwan

Medical tests inspection process contains the specimens collection, transport, reception, detection and report. Any process variable occurs could cause medical errors, and lead to patients not receive appropriate medical treatment immediately. Especially specimens loss events are apt to cause discontent of patients and clinical staffs, and even evolve into medical dispute. It is not easy to clarify the responsibility of the specimens loss. For this reason, we set up a specimens barcode management system to monitor the specimens transport, find the key points of specimens loss, improve workflow, and reduce the risk of specimens loss.

From December 2013, we began to use specimen barcode management system for ward specimens. Nurses could get specimens shipping information, and medical technologists could monitor specimens transport processes. During the monitoring of specimens transport, we still had abnormal events. To avoid too late detect of specimens transport abnormal events, we added the frequency of active specimens tracing. Medical technologists needed to check once every 30 minutes for emergency specimens and every two hours for general specimens.

By constantly reviewed and improved, specimens annual loss rate reduced from 0.30 ppm in 2014 to 0.29 ppm in 2015, and the early detected eight near miss events. Specimens transport mechanism is required cooperation with the team of nurses, specimens transporters and medical technologists. By the perfect monitoring mechanisms of specimens transport, we would have chance to achieve enhancing the quality of specimens transport and reduce specimens loss.

3-8、王方妤壁報論文

PI-12 Analyze the Health Conditions of 65-and-Older Senior Citizens in Taipei City
Benefits of the Elderly Physical Checkup Welfare

Wang Fang-Yu, Tsai Hui-Sru, Lee Chuan Po, Fan Hsiu Chin

Pathology and Laboratory Medicine, Taipei Veterans General Hospital, Taiwan

Senior citizens who are older than 65 years old accounted for 14.4% of Taipei City population in 2015. Taipei City government had spent over 40 billion NTD on the elderly physical checkup in 2015, which highlighted the importance of Preventive Medicine. Therefore, we analyzed 2,053 cases of the elderly physical checkup reports at our hospital in 2015 to discuss benefits of this welfare. 2,053 cases consisted of fifty-to-fifty male and female and 76.5 years old in average age. The results showed that 241(11.3%) of the elderly had hyperglycemia, and 23(9.5%) of them had urine glucose which indicated poorly hyperglycemia controlled. Besides 61(25.3%) of the elderly with hyperglycemia had urine protein and even 16(6.6%) had been found increasing RTE showed renal structure destroyed. 173(8.4%) of the elderly had hyperlipidemia, and 21(12.1%) of them had been diagnosed of heart diseases. 179(8.7%) of the elderly had hypertension, and 41(22.9%) of them had decreased eGFR(< 60) and 5(2.8%) of them combined with heart disease. Stool OB(EIA) examination, on the other hand, showed 165(17.3%) positive results, and only 82 of them had returned for follow-up and executed the colonoscopy examination. The results of colonoscopy were distinguished into normal/hemorrhoids, benign polyps and malignant neoplasm, which accounting for 33(20%), 38(23%), 11(6.7%) of OB(EIA) positive results, respectively. Moreover, there were as high as 50.3% of the elderly did not return for follow-up or refuse to execute the colonoscopy examination. It seems that the lower-estimated analysis results compared to current prevalence demonstrated the elderly had done physical checkup regularly treated their health more aggressive. Thus, to make the outcomes of this welfare even better, we suggest providing elderly-specific efficacy tests and more approachable elderly-friendly checkup process. So that, with this welfare, government could spend relatively low costs to screen out early-stage diseases instead of great amount of long-term-care expenses.

3-9、陳依妘壁報論文

PC-28 The Discussion of Intravascular Pattern Plasma Hemoglobin versus Haptoglobin and The Others Parameters

Yi-Yun Chen, Hui-Sru Tsai, Fang-Yu Wang, Chun-Chuan Lin, Chia-Lian Chung, Chuan-Po Lee, Yen-Li Wang, Hsiu-Chin Fan

Division of General Laboratory, Department of Pathology and Laboratory Medicine, Taipei Veterans General Hospital, Taiwan, ROC, Taiwan

While increasing destruction of RBC in intravascular hemolysis, the level of free hemoglobin in plasma (plasma-Hb, A B dimers) shall be elevated and integrate with haptoglobin. Then the hemoglobin-haptoglobin complexes were removed by macrophages in the reticuloendothelial system like spleen, liver, lymph nodes. Bestdes, plasma-Hb would filter out by glomerular and shall be reabsorbed by renal tubular epithelial cells, if not, the urine hemosiderin would present. The reference range of plasma hemoglobin tested by tetramethylbenzidine (TMB)-colorimetry is < 5 mg/dl, and the clinical determined concentration is > 20mg/dL. There are not many tests directly relative to detect intravascular hemolysis, so we were interested in the pattern of it and conducted a survey of 289 cases to discussion the relations between plasma hemoglobin, haptoglobin, LDH, bilirubin, hemoglobin, reticulocyte and urine hemosiderin. The concentration of plasma hemoglobin was divided into three groups: < 5 mg/dl, (group I), 5~20 mg/dl, (group II), > 20 mg/dl, (group III). The results of haptoglobin were low while results of LDH, bilirubin and reticulocyte were high in group II and group III. Also, the statistical results of haptoglobin, bilirubin and reticulocyte all showed significant difference ($p < 0.05$) in group I, group II and group II, group III. When the results of plasma hemoglobin were lower than 5 mg/dl, and haptoglobin test, it's likely to reduce the possibility intravascular hemolysis.

3-10、王晏莉壁報論文

PH-06 The Coexisting of Renal Tubular Epithelial Cells and Cystine Crystals in Acetylcysteine Dysmetabolism Case A Case Report and Survey

Yen-Li Wang, Chuan-Po Lee, Ya-Chin Li, Hui-Szu Tsai, Hsiu-Chin Fan

Division of General Laboratory, Department of Pathology and Laboratory Medicine, Taipei Veterans General Hospital, Taiwan, R.O.C.

The 86-year-old male, who had history of liver cirrhosis, irritable bowel syndrome and gastric ulcer, was brought to our emergency room (ER). Urinalysis and biochemistry were normal except CRP evaluated (4.05 mg/dl); renal tubular epithelial cells (6-10/HPF) and cystine crystals were presented in urine sediment. Urinary cystine crystals occur rarely, usually found in cystinosis, cystinuria, Fanconi syndrome and other congenital disorders of metabolism. In this case, the patient used acetylcysteine (NAC) as a mucolytic agent led to cystine crystals occurrence in urine. High concentrated cystine in urine may deposit as crystals in renal tubular epithelial cells because of most of the cystine metabolic insufficiency or glomerular malabsorption of cystine, and then causing cystine stones. Therefore, we could find many cystine crystals accompanied by renal tubular epithelial cells falling off in urine sediment. It could be used as a reference to acetylcysteine dosage. We should take renal malfunction and kidney stones into consideration. Renal tubular epithelial cells are extremely sensitive to high nephrotoxic drugs. Those will be impaired after exposing to high nephrotoxic renal filtrate and shed within 2 hours, then return to normal after 24 hours. In our hospital, there are over 150,000 urinalysis specimens a year in average. We analyzed 11,958 specimens of 2016/02 and 968 renal tubular epithelial cells cases (8.09%) were noted. We found renal tubular epithelial cells were related to OB, PRO, LEU, RBC and WBC in urine ($p < 0.05$). In addition, the present rate of specimens in OPD, IPD and ER were 6.19% (417/6,741), 9.53% (329/3,454) and 12.59% (222/1,763). It was very interesting that the highest present rate was in ER specimens and it was because of higher pressure. Before abnormal warnings of blood biochemical examination, renal tubular epithelial cells that are shedding in urine can be used as an important indicator of early kidney damage.

3-11、李嘉凌壁報論文

PL-12 Comparing respiratory viral identification efficacy between traditional culture methods and RVP.

Chialin Lee[1], Wensung Weng[1], Hueiyuan Lee[1], Yujiun Chan[1,2]

1 Pathology and Laboratory Medicine, Taipei Veterans General Hospital, Taiwan
2 National Yang Ming University

Identification of respiratory viruses can be a cumbersome and prolong process. For the purpose of rapid diagnosis, we adopted and evaluated a commercial multiplex PCR kit, xTAG Respiratory Viral Panel (RVP) FAST v2 Test which can detect multiple common respiratory viruses and subtypes in a single test. This facilitates the rapid detection of common respiratory viruses. The aims of this study were to evaluate practicability and performance of the RVP test, by comparing with the traditional culture methods. A total of 50 frozen clinical specimens were subjected to the RVP test according to manufacturer's instructions. These specimens consisted of known respiratory and non-respiratory viruses as well as negative result previously identified by traditional culture methods. The RVP test was completed in about 7 to 8 hours, while the traditional culture methods required few days for identification. The RVP test has a substantial positive consistency compared to the traditional culture methods (Kappa value = 0.638). However, 6 samples (12.0%) which identified as respiratory virus by the RVP test were reported otherwise by the traditional culture methods. The RVP test has a higher detection rate compared to the traditional culture methods (48.0% vs. 40.0%). Furthermore, there were 8 samples (16.0%) showed to be co-infections. Therefore, the RVP test is convenient for rapid detection of respiratory viruses and it can provide a higher detection rate and co-infection compared to the traditional culture methods.

3-12、陳亞芬壁報論文

PA-06 A Nosocomial Outbreak of Ralstonia pickettii by Contaminated Saline Solution in a Taipei Hospital.

Chen Ya Fen, Kuo Fu Mei, Chen Yi Jyun, Wu Yi Chi, Lee Shwu Yea, Chan Yu Jiun

Division of Microbiology, Department of Pathology Laboratory Medicine, Taipei Veterans General Hospital, Taiwan

From 3 May to 30 June 2015, 31 patients in a hospital in Taipei were culture-positive for Ralstonia pickettii from their blood specimens. They had been exposed to 0.9% saline solution which was manufactured by one company (YF Chemical Corp). Two of the 17 saline solution samples collected at the hospital were found to contain Ralstonia pickettii. The isolates were analyzed by MALDI-TOF MS for microbial identification. In order to investigate the relatedness of the clinical isolates and the isolates from saline solution, all isolates were genotypically related analyzed by pulsed-field gel electrophoresis (PFGE) analysis. The PFGE (DNA-digested with SpeI restriction endonuclease) result showed that the R.pickettii from patients and the isolates from saline solution were related.

3-13、吳易企口頭論文

OL04-5 Differentiation of toxigenic and non-toxigenic *Clostridium difficile* by Matrix-Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry (MALDI-TOF)
Develop the utilization of mass spectrometry for toxigenic *C. difficile* identification and compare the performance of different testing modalities

Yi Chi Wu[1], Yu Han Huang[1], Ya Fen Chen[1], Chia Lin Lee[1], Yu Jiun Chan[1,2]

1 Division of microbiology, Department of pathology and laboratory medicine, Taipei Veterans General Hospital, Taipei, Taiwan
2 School of Medicine, National Yang Ming University, Taipei, Taiwan

Clostridium difficile(*C. difficile*) belongs to Gram positive anaerobic bacilli and its infection is highly associated with antibiotics overuse and will cause diarrhea and colitis. Toxigenic *C. difficile* is one of the major pathogens for diarrhea among healthcare-associated infections and *Clostridium difficile* infection(CDI) is an important indicator for antibiotic stewardship. Rapid and accurate diagnosis of CDI cases is crucial for proper infection control. However, traditional gold standard to identify toxigenic *C. difficile* is time consuming. Therefore, to develop a convenient method for toxigenic *C. difficile* identification is crucial.

Current diagnostic methods forc include 1. Anaerobic culture for *C. difficile*, 2. Enzyme-linked immunoassays for toxins A and B, and 3. Molecular methods for toxic genes. However, they all have limitations and standard anaerobic culture methods failed to differentiate toxigenic from non-toxigenic strains. It has been a great success in identification of bacterial isolates by mass spectrometry. We want to develop a novel technique for toxigenic *C. difficile* identification by MALDI-TOF. A total of 100 stools were included in the study and investigated in parallel by anaerobic culture, GDH - toxin A/B EIA testing of isolates and toxin B gene DNA amplification. Based on toxin B gene DNA amplification and anaerobic culture, a total of 69 samples were classified as *C. difficile* positive. Only 39 strains were identified as toxigenic by toxin B gene DNA amplification and GDH-toxin A/B EIA test. Then the 39 toxigenic strains and 30 non-toxigenic strains were were further confirmed as *C. difficile* by MALDI-TOF RUO mode. Furthermore, the spectrum comparison between the toxigenic and non-toxigenic groups showed differently. There were 3 speaks present in toxigenic group but not in non-toxigenic group, which were 3961 m/z, 7262 m/z and 7921 m/z. These results suggested that MALDI-TOF RUO mode could differentiate *C. difficile* toxigenic strains from non-toxigenic strains.

附錄四、Sysmex i-square實驗室參觀

Course2

[illegible]	Departure	[illegible]
[illegible]		[illegible]
9:00	Himeji Castle	Sightseeing
[illegible]	Sysmex i-Square	Lunch, Lab presentation
[illegible]	Tokyu REI Hotel	Bus Terminal
15:00	Portopia Hotel	Bus Terminal

Himeji Castle

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Sysmex i-Square

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