第183回東京医科大学医学会総会

日時：令和元年6月1日（土）午前11時00分～午後4時50分
会場：東京医科大学病院 本館6階

【臨床講演】
・佐々記念賞及び東京医科大学研究助成金授与式
・医学会奨励賞受賞講演並びに表彰式
・特別講演
【第1・第2・第3会議室】
・ポスター展示・発表
・国際交流学生報告
当番分野：形成外科学分野、医学教育学分野

投稿論文奨励賞受賞講演
（座長／河合 隆 主任教授）
（1） Involvement of psychological factors in spasmodic dysphonia
（耳鼻咽喉科・頭部外科学 臨床研究医） 高野 愛弓

医学会奨励賞受賞講演
（座長／河合 隆 主任教授）
（1） The polarity and property of radial glia-like neural stem cells are altered by seizures with status epilepticus
（組織・神経解剖学大学院博士課程4年） 高橋 奈都
（2） Antitumor effects of IL-27 against a mouse chronic myeloid leukemia model
（医学総合研究所：免疫制御学研究部門大学院修士課程2年） 祐井 直子
（3） Molecular imaging of the hCD19 CAR signalosomes, “CAR microclusters”
（免疫学 講師） 町山 裕亮

特別講演
I. 演題「びまん性肺胞障害に対する新たな治療法の探索」
講演者 阿部 信二 主任教授（呼吸器内科学）
座長 池田 慎彦 主任教授（呼吸器・甲状腺外科学）

II. 演題「これからの肝細胞癌における画像診断の方向性」
講演者 斎藤 和博 主任教授（放射線医学）
座長 青野 義彦 主任教授（腎臓内科）
P2-01
Clinical study of proteinuria affected by menstrual blood

(社会人大学院博士課程 3 年腎臓内科学)
○後藤 茂津希
(腎臓内科学)
長岡 由女、渡邊 カンナ、宮岡 良卓
長井 美穂、高橋 理恵子、菅野 義彥
(循環器内科)
松本 知歩

【Objective】 On latest clinical practice, urinalysis is not conducted for several days at menstrual period because it disturbs an accurate evaluation of the protein urine affected by menstrual blood. However, it is not clear how menstrual blood gives any influence on proteinuria. As adult women generally have menstrual cycles about every month, it is not rare case that the days of the menstrual cycle hit on date of consultation at the hospital. In this study, we investigated how hemoglobinuria caused by the hemolysis influenced protein urine.

【Methods】 For seven years from April 2011 to March 2017, clinical surveys were conducted in 746 general adult women volunteers among patients of Tokyo Medical University Hospital. They had quantitative or qualitative examination of urine in the timing of both monthly and non-monthly periods. These data were analyzed by the correlative and regression analysis. This study was approved by our ethics committees.

【Results】 There is no effect on proteinuria by the examination for urine fixed-quantity in a monthly and non-monthly periods. If there is little occult blood in the examination for urine qualitative analysis at menstrual period, it may not affect proteinuria.

【Conclusion】 This study highlighted the effect of menstrual blood on proteinuria. This is the first retrospective study having been examined how menstruation gives an influence on proteinuria. It may contribute to showing that a little occult blood has no influence on a quantity of protein urine. However, the result has not yet sufficiently clear. A further study is necessary to analyze the effect of menstrual blood to proteinuria.

P2-02
ESI-09 and HJC0197, known EPAC inhibitors, sensitize lung cancer cells to glucose starvation by uncoupling mitochondrial electron transport, leading to bioenergetic crisis

(社会人大学院博士課程 3 年呼吸器内科)
○岩井 悠希
(呼吸器内科)
河越淳一郎、中村 博幸、青木 和徳
(呼吸器内科)
小山 信之

Cancer cells utilize aerobic glycolysis and proliferate continuously beyond the capacity of their blood supply, leading to microenvironmental stresses such as hypoxia, nutrient (glucose) deprivation and extracellular acidosis. We have previously showed that extracellular acidosis prevents glucose starvation-induced death of lung cancer cells by reducing glycolytic energy production and de novo protein/RNA synthesis that consume ATP (AACR 2018). This acidosis-dependent, glucose starvation-resistant, and ATP-saving phenotype is thought to serve as an adaptive response to glucose deprivation in cancer cells to survive an energy-restricted tumor microenvironment. In the present study, we screened small-molecule inhibitors to explore therapeutic reagents that can exert cytotoxicity against the glucose starvation-resistant phenotype in the lung cancer cell lines, A549 and H1299 cells. Among the various inhibitors tested, we found that ESI-09 and HJC0197, known as inhibitors of the exchanger protein directly activated by cAMP (EPAC), reduced the cellular ATP levels and survival under glucose deprivation stress under both acidic (pH 6.8) and neutral (pH 7.4) conditions. Interestingly, the ATP-reducing effect of ESI-09 and HJC0197 was not
due to inhibition of the EPAC function, because the effect cannot be reproduced with other EPAC inhibitors, such as CE3F4, EPAC5376753 and ESI-05. Rather, the effect of ESI-09 and HJC0197 was attributed to their previously unknown action of uncoupling the mitochondrial electron transport chain (ETC). We found that ESI-09 and HJC0197 induced mitochondrial proton leak, causing ATP deficiency and cell death via the following three mechanisms: 1) decreased mitochondrial ATP production due to ETC uncoupling, 2) increased ATP consumption resulting from reversal of F0/F1-ATPsynthase/ATPase to maintain the mitochondrial membrane potential, and 3) glucose deficiency as a result of increased glucose consumption due to a compensatory stimulation of glycolytic ATP production. We found that ESI-09 and HJC0197 induced mitochondrial proton leak, causing ATP deficiency and cell death via the following three mechanisms: 1) decreased mitochondrial ATP production due to ETC uncoupling, 2) increased ATP consumption resulting from reversal of F0/F1-ATPsynthase/ATPase to maintain the mitochondrial membrane potential, and 3) glucose deficiency as a result of increased glucose consumption due to a compensatory stimulation of glycolytic ATP production. The energy-saving phenotype of cancer cells is thought to serve as an adaptive strategy that allows cell survival in an energy-restricted, acidic tumor microenvironment. Our results suggest that ESI-09 and HJC0197 disrupt bioenergetic tumor metabolism for energy homeostasis in both acidic and neutral microenvironment, and may exert a therapeutic effect against the starvation-resistant phenotype of cancer cells. The complete chemical structures of ESI-09 and HJC0197 will be divulged at the time of the presentation at the meeting.

P2-03
Evaluation of Yanagihara facial nerve grading system based on a muscle fiber analysis of human facial muscles

P2-04
Effect of phosphorylated estrogen receptor alpha on apoptosis in human endometrial epithelial cells
during the proliferative phase, but decreased in the secretory phase. Observation of the phosphorylated ERα revealed that while the expression of p-ERα (Ser 104) was constant, p-ERα (Ser 118) was shown following a cyclic pattern like that of the p-AKT1/2/3 (Thr 473).

To reveal the difference between normal and cancerous glandular cells, cultured Ishikawa cells were first examined immunohistochemically. The expression pattern of phosphorylated ERα and AKT in the untreated Ishikawa cells was similar to that of the normal endometrial cells, except that the expression of p-ERα (Ser 167) was only found in Ishikawa cells. Following treatment with various inhibitors that specifically target the ErbB/PI3K/AKT pathway, it was found out that the expression of p-ERα (Ser 118) and p-ERα (Ser 168) was inhibited. Further examination showed that inhibition of PI3K or AKT, rather than ErbB could induce apoptosis, which could be antagonized by the addition of estrogen, indicating a mitochondrial pathway involved. Further study is necessary to explore functional difference of ErbB/PI3K/AKT in normal and cancerous endometrial cells.

P2-05
デュシェンヌ型筋ジストロフィーモデルマウスの腎機能評価

（病態生理学）
○和田 英治、林 由起子

デュシェンヌ型筋ジストロフィー（DMD）は最も頻度が高く、かつ重篤な遺伝性筋疾患である。根本的な治療法は確立されていないが、心筋保護治療法によって患者の寿命が飛躍的に延びている。一方、大半の患者が骨密度低下による骨粗鬆症や骨折を経験する。さらに患者の高齢化に伴い腎機能低下などの多臓器不全が新たな合併症として報告されている。低分子プロテアーゼインヒビターであるcystatin Cの血清値が筋肉量に影響を受けないことから、筋症候者における腎機能の評価に有用であることが報告された。DMDモデルマウスであるmdxは筋症状をよく反映しており骨代謝についても研究が進んでいるが、腎機能について詳細な検討がなされていない。本研究では、mdxマウスの腎機能を評価するとともに、筋ジストロフィー症状との関連を明らかにすることを目的とした。さらに、摂取する食餌のリン含有量を変化することでmdxマウスのリン代謝と骨代謝への影響を検討した。その結果、mdxマウスの血中cystatin C値は6週齢頃まで野生型マウスと差はないものの、9週齢頃から上昇し、12週齢では有意差をもって高値となった。

P2-06
Immunohistochemical study of cell differentiation and microvessel property in human mucosa with tooth marks

（社会人大学院博士課程2年人体構造学）
○佐藤 徹

Angiogenesis is an important issue related to normal growth and differentiation. In irregularly forms of oral mucosa, angiogenesis is a critical issue in the progression of human disease. The tooth marks occur after pressing the teeth for a long period under muscle tension in the human oral cavity. However, this site of
angiogenesis, cell differentiation and microvessel density is not known in the human mucosa. Therefore, we investigated the relationship of differentiation (Ki-67) and angiogenesis markers (CD31, D2-40, VEGF-A) in the second molar region of oral mucosa in dentulous group with tooth marks using immunohistochemical methods compared to that of edentulous. In this result, developed vessels and lymphatic vessels were found in irregular mucosa and the development of these vessels in the oral mucosa provided specific histological information on future tumor progression.

P2-07
Utility of Implantable Cardiac Monitoring System for detecting cardiac arrhythmias in patients with unexplained syncope

(循環器内科)
○矢崎 義直, 里見 和浩, 高田 康之
嘉澤脩一郎, 近森大志郎

【Introduction】Although risk of death in patients with cardiac syncope is double compared to the general population, identifying the cause of syncope is very challenging. The implantable Cardiac Monitoring (ICM), which can continuously monitor and store ECG recordings, was invented. Utility of ICM for patients with syncope has not been thoroughly investigated.

【Methods】We conducted a prospective Multi-Centre observational study in 120 patients (mean age 68±16 years, 80 males) implanted with ICM for unexplained syncope between 2011 and 2018. We assessed the diagnostic yield and elapsed time for diagnosis of syncope.

【Results】During the mean follow-up period of 18±19 months, causes of syncope were diagnosed in 37% of all patients. The causes of syncope were sick sinus syndrome (77%), paroxysmal atrioventricular block (7%), tachycardia (9%), and others (7%). The mean period from the first episode of syncope to ICM implantation was 30±71months (range 0-490). And the period from implantation to diagnosis was 4±5 months (range 0-20).

【Conclusions】ICM was useful to diagnose unexplained repetitive syncope. It was a relatively long process for patients with syncope from the first episode of symptoms to ICM implantation. Early implantation of ICM should be considered in patients with undefined cause of syncope by standard diagnostic process. Further study is needed to investigate whether the strategy of initial ICM implantation would provide a more accurate diagnosis than a conventional strategy.

P2-08
Different ECG Changes of CRBBB with Time between Health Check-up Examinees and Patients with Cardiac Diseases

(循環器内科)
○嘉澤脩一郎, 里見 和浩, 高田 康之
矢崎 義直, 近森大志郎

【Purpose】CRBBB is benign arrhythmia, but an its association with risk for cardiovascular or total death was reported. We investigated the changes of CRBBB ECG during follow-up in healthy and diseases subjects.

【Subjects and Methods】As a control, 80 CRBBB individuals at the health check-up (55.1±10.8 yrs, male 81.3%) and 50 patients with cardiac diseases (60±8 yrs, male 92%) were included, and the ECG changes were compared during follow up >3 years.

【Results】At baseline, there were significant differences in PR interval, QRS width and QTc between control and patient group: 165±21 vs. 181±29 ms, 141±13.0 vs. 156±18 ms and 419±19 ms vs. 444±33 ms (P<0.001 for all), respectively. During the follow-up, QT and QTc prolonged in the control: 415±29 ms to 423±28 ms and 419±19 ms to 424±21 ms (P<0.01). Prolonged QRS width >10 ms during follow up was more frequent found in the patient group than the control (9.8% vs. 1.3%, P=0.016). Normalization of QRS was observed in 6.1% and 7.8% for control and patients (P=0.713).

【Conclusion】QRS and QTc were prolonged, and widening of QRS occurred more often in the patient group. The significance of the different ECG changes during follow-up need to be determined.
P2-09
一酸化窒素の新規シグナル分子8-nitro-cGMPによる骨リモデリング調整の解明

（八王子：歯科口腔外科）
○金子覚実、小川 隆
（口腔外科学）
近津 大地

【目的】炎症で産生が亢進する一酸化窒素(NO)は可溶性グアニル酸シクラーゼを直接活性化し、cGMP依存的なシグナルを伝える。近年、NOの新規下流シグナル分子として8-nitro-cGMPが発見された。我々は以前に、8-nitro-cGMPが成長板の軟骨細胞で生成され、骨伸長を促進することを報告した。骨伸長のみならず、骨の形成と吸収からなるリモデリングもNOによって調整されることが知られている。そこで我々は、8-nitro-cGMPの骨リモデリングにおける役割を骨芽細胞、破骨細胞を用いて解析した。

【方法】初代培養マウス骨芽細胞（OB）は、生後1日目のマウス頭蓋骨より単離した。また、マウス骨髄細胞をM-CSF存在下に3日間培養して誘導したマクロファージを、M-CSFおよびRANKL存在下に3日間培養することで破骨細胞（OC）分化を誘導した。8-nitro-cGMP特異抗体を用いた免疫染色によりOB、OCにおける8-nitro-cGMP生産を検出した。8-nitro-cGMPを添加しOBの培養を行い、アルカリ非ホスファターゼ（ALP）活性および石灰化物形成に及ぼす8-nitro-cGMPの影響を解析した。また、OCへの分化に対する8-nitro-cGMPの効果を酒石酸抵抗性ホスファターゼ（TRAP）活性で評価した。OB、OCともに分化マーカーの遺伝子発現を定量PCRで評価した。

【結果】OB、OCは拮抗8-nitro-cGMP抗体によって染色された。培地に添加した8-nitro-cGMPは、OBの増殖には影響を及ぼさず、ALP活性が低下と石灰化を抑制した。cGMPの膜通過誘導体である、8-bromo-cGMPは逆に骨芽細胞分化を促進した。8-nitro-cGMPと反応・不活性化させる活性イオウ分子種の生成に必要な酵素CARS2をノックダウンしたところ、8-nitro-cGMP添加と同様の結果が得られた。また、8-nitro-cGMPはOCへの分化を有意に促進した。8-nitro-cGMPは、RANKLによって誘導される破骨細胞分化とRANKの発現を促進した。【考察】これらの結果は、NO産生が亢進する炎症性の環境下で、8-nitro-cGMPが骨吸収促進と骨形成抑制による骨の脆弱化を引き起こす原因物質の1つである可能性が考えられた。今後、本研究が関節リウマチや歯周病など炎症性骨疾患の治療法の開発につながる可能性が考えられる。

P2-10
Single molecule imaging reveals a distinct difference in Lck-dynamics between CD4+ and CD8+ T cells

（免疫学）
○町山 裕亮、若松 英、秦 喜久美
矢那瀬朋子、古田 昌枝、豊田 博子
横須賀 忠

CD4+とCD8+ T cells conjugate with APCs and their TCRs recognize the cognate antigens on MHC. We previously demonstrated that clustering of TCRs at the T-APC interface upon antigen recognition, named a “TCR microcluster”, worked as a signalosome for T cell activation. In both CD4+ and CD8+ T cells, Lck associating to CD4 or CD8 translocates to TCR microclusters, and then phosphorylates TCRs and their downstream signaling molecules. It is still unclear whether Lck shows different contributions to TCR signaling in CD4+ and CD8+ T cells. To address this issue, we examined the dynamics of CD4, CD8 and Lck using TIRF microscopy and antigen-presenting lipid bilayers. We then found that CD8 and Lck together formed rigid clusters with TCRs in CD8+ T cells, whereas neither CD4 nor Lck showed specific localization with TCR microclusters in CD4+ T cells. Even in CD4+ T cells, constitutively active mutant Lck (Y505F) translocates into TCR microclusters, indicating that the localization and the dynamics of Lck appear to strongly contribute to TCR signaling. We therefore developed a new system that enables to simultaneously trace the movement of individual Lck molecules and the position of TCR microclusters. Individual Lck molecules showed different types of movement, which were freely mobile outside TCR microclusters or long-
term resident within them. We will quantitatively analyze the dynamics of Lck to be clear the relationship between Lck dynamics and TCR signaling and find the distinct signalosome of Lck contributing for the initiation of CD4+ or CD8+ T cell activation.

P2-11
トランスジェニックゼブラフィッシュを用いた筋萎縮治療薬スクリーニング

（病態生理学）
○川原 玄理、中屋敷真未、林 由起子

Muscle RING-finger protein-1 (MURF1) is a muscle marker protein and plays a role in muscle atrophy. We focused on the genes whose expression is induced by miR-34a, a potent tumor suppressor miRNA in many cancer types including lung cancer and investigated to elucidate the mechanisms for the tumor suppressor function of miR-34a. As a result, we found that the miR-34a inhibits the proliferation of lung cancer cell through induction of the tumor suppressor BLU (also known as ZMYND10) expression. Interestingly, miR-34a/AGO complex binds to a novel lncRNA included two miR-34a binding sites and expressed from the divergent promoter of the BLU gene in the nucleus. Furthermore, siRNAs-targeting the lncRNA also induced BLU transcription. These results suggest that miR-34a/AGO complex led to induced transcription of tumor suppressor BLU through binding to the lncRNA and inhibits lung cancer development. This non-canonical miRNA pathway seems to control various biological phenomenon including cancer development. Addition, investigation of the phenomenon is important as a starting point for understanding the lncRNA expressed from divergent promoter.

P2-12
miR-34 family co-transcriptionally regulates BLU tumor suppressor via binding to antisense novel lncRNA transcribed from promoter locus in non-small cell lung cancer

（分子病理学）
○大野慎一郎、老川 桂生、原田裕一郎
黒田 雅彦

We focused on the genes whose expression is induced by miR-34a, a potent tumor suppressor miRNA in many cancer types including lung cancer and investigated to elucidate the mechanisms for the tumor suppressor function of miR-34a. As a result, we found that the miR-34a inhibits the proliferation of lung cancer cell through induction of the tumor suppressor BLU (also known as ZMYND10) expression. Interestingly, miR-34a/AGO complex binds to a novel lncRNA included two miR-34a binding sites and expressed from the divergent promoter of the BLU gene in the nucleus. Furthermore, siRNAs-targeting the lncRNA also induced BLU transcription. These results suggest that miR-34a/AGO complex led to induced transcription of tumor suppressor BLU through binding to the lncRNA and inhibits lung cancer development. This non-canonical miRNA pathway seems to control various biological phenomenon including cancer development. Addition, investigation of the phenomenon is important as a starting point for understanding the lncRNA expressed from divergent promoter.
P2-13
Adipose tissue-derived mesenchymal stem cells secrete the functional-exosomes which make an improvement of rheumatoid arthritis on mice

(社会人大学院博士課程 4年分子病理学)
○辻丸光一郎
(分子病理学)
孤梨 正勝、石川 章夫、前尾松一郎
黒田 雅彦
(疾患モデルセンター)
須藤カツ子

※抄録の掲載を辞退する。

P2-14
Metabolomic Analyses of Brain Tissue in a Cecal Ligation and Puncture-induced septic mouse model of Cyclophilin D KO mouse

(社会人大学院博士課程 3年麻酔科学)
○小林 賢礼
(麻酔科学)
内野 博之、石田 裕介、長島 史明
柴田勝一郎
(医学総合研究所)
中島 利博、藤田 英俊

※抄録の掲載を辞退する。

P2-15
Identifying novel candidate genes of early placentation using human induced pluripotent stem cell (hiPSC)-derived trophoblasts

(社会人大学院博士課程 3年産科婦人科学)
○土田奈々枝、小島 淳哉、久慈 直昭
西 洋孝

【Objective】 Human induced pluripotent stem cells (hiPSCs) treated with bone morphogenic protein 4 (BMP4) can differentiate into extraembryonic tissues, which can represent useful models of early stages of trophoblast (TB) differentiation. However, such differentiated cells are heterogeneous. To characterize hiPSC-derived TB lineage cells, we isolated TB cells using a pan-TB marker, keratin 7 (KRT7) and performed comprehensive gene expression analysis.

【Methods】 Four types of hiPSCs were treated with 50 ng/mL of BMP4 for 10 days. KRT7-positive cells were purified from differentiated cells using flow cytometry and characterized using a DNA microarray platform. Differences in gene expression profiles between KRT7-positive cells and hiPSCs were compared.

【Results】 Comparisons of our microarray data with human transcriptome data from a previous large-scale analysis showed that gene expression patterns of KRT7-positive cells were similar to those identified in placental tissue. In total, 259 upregulated genes were commonly expressed in all four KRT7-positive groups, including well-known TB markers. Among these, we identified seven genes whose placental expression and functions have not been previously characterized. To identify whether these genes are candidate novel TB-related genes, we confirmed their expression in primary placental tissue by immunohistochemical staining. As a result, among these seven genes, only XAGE2 and KCNQ2 were expressed in TB layers. XAGE2 was expressed throughout pregnancy, and KCNQ2 was expressed only in cytotrophoblasts of the first trimester placenta. Knockdown of XAGE2 by siRNA in hiPSC-derived TB lineage cells did not exhibit any obvious phenotypes.

【Conclusions】 BMP4-treated KRT7-positive cells were similar to those of the human placenta. Our approach allowed the identification of novel genes possibly involved in placentation. Further studies are needed to confirm the functions of these genes.
The Role of Quantitative Metabolic Metrics on FDG-PET/CT in Predicting pathological Invasive Factors in cN0 Lung Adenocarcinoma

Background: Growing evidence suggests that FDG-PET/CT has greatly contributed to the preoperative investigation of early-stage lung cancer. The maximum standardized uptake values (SUVmax) of the primary lesion is widely reported to be associated with prognosis in NSCLC while other metabolic metrics, metabolic tumor volume (MTV) and total lesion glycolysis (TLG) have been explored as a measure of metabolic tumor burden in recent years. The purpose of this study is to investigate the role of quantitative metabolic metrics in predicting the incidence of pathological invasive factors including microscopic vascular invasion, pleural invasion, and lymph node metastasis in cN0 lung adenocarcinoma.

Method: We examined 265 patients with clinical stage 0-II (cN0) adenocarcinoma. Pre-operative PET/CT and subsequent complete resection was performed for all the patients during the period from August 2012 to July 2017. The maximum tumor and solid-part diameter on HRCT and the three metabolic metrics on PET/CT measured by the SYNAPSE VINCENT as the volume viewer software were observed. In the current study, MTV was defined as the total tumor volume with an SUV >2.5 while TLG was calculated as meanSUV × MTV. We assessed the relationship between these parameters and the incidence of pathological invasive factors.

Result: Among 265 patients, 18 (7%) patients were clinically staged as 0, 205 (77%) as IA, 32 (12%) as IB, and 10 (4%) as II, respectively. Pathological vascular invasion, pleural invasion, and lymph node metastasis were found in 100 (38%), 53 (20%), and 45 (17%) patients, respectively. SUVmax, MTV, and TLG were dichotomized at cut-off level by the receiver operating characteristic (ROC) curves for pathological invasive factors. ROC curve yielded area under the curve values of 0.812, 0.915, and 0.882 for SUVmax, MTV, and TLG, respectively. Univariate analysis showed that SUVmax (Hazard Ratio (HR), 27.185; p<0.001), MTV (HR, 24.580; p<0.001), TLG (HR, 24.580; p<0.001), maximum tumor size (HR, 2.495; p<0.001), solid-tumor size (HR, 7.830; p<0.001), c-stage (HR, 14.418; p<0.001), and sex (HR, 1.882; p=0.013) were significantly associated with the incidence of pathological invasive factors. Multivariate analysis showed that SUVmax was the independent predictor (HR, 7.006; p=0.001). The frequency of pathological invasive factors of patients with SUVmax >4.4, MTV >0.75 mm³, and TLG >2.6 were 82%, 84%, and 84%, respectively.

Conclusion: In cN0 early-stage lung adenocarcinoma, the measurement of SUVmax, MTV, and TLG on FDG-PET/CT was beneficial for the prediction of pathological invasive factors.

IMRT を施行された I 期非小細胞癌における肺臓炎の範囲の検討

Method: We examined 265 patients with clinical stage 0-II (cN0) adenocarcinoma. Pre-operative PET/CT and subsequent complete resection was performed for all the patients during the period from August 2012 to July 2017. The maximum tumor and solid-part diameter on HRCT and the three metabolic metrics on PET/CT measured by the SYNAPSE VINCENT as the volume viewer software were observed. In the current study, MTV was defined as the total tumor volume with an SUV >2.5 while TLG was calculated as meanSUV × MTV. We assessed the relationship between these parameters and the incidence of pathological invasive factors.

Result: Among 265 patients, 18 (7%) patients were clinically staged as 0, 205 (77%) as IA, 32 (12%) as IB, and 10 (4%) as II, respectively. Pathological vascular invasion, pleural invasion, and lymph node metastasis were found in 100 (38%), 53 (20%), and 45 (17%) patients, respectively. SUVmax, MTV, and TLG were dichotomized at cut-off level by the receiver operating characteristic (ROC) curves for pathological invasive factors. ROC curve yielded area under the curve values of 0.812, 0.915, and 0.882 for SUVmax, MTV, and TLG, respectively. Univariate analysis showed that SUVmax (Hazard Ratio (HR), 27.185; p<0.001), MTV (HR, 24.580; p<0.001), TLG (HR, 24.580; p<0.001), maximum tumor size (HR, 2.495; p<0.001), solid-tumor size (HR, 7.830; p<0.001), c-stage (HR, 14.418; p<0.001), and sex (HR, 1.882; p=0.013) were significantly associated with the incidence of pathological invasive factors. Multivariate analysis showed that SUVmax was the independent predictor (HR, 7.006; p=0.001). The frequency of pathological invasive factors of patients with SUVmax >4.4, MTV >0.75 mm³, and TLG >2.6 were 82%, 84%, and 84%, respectively.

Conclusion: In cN0 early-stage lung adenocarcinoma, the measurement of SUVmax, MTV, and TLG on FDG-PET/CT was beneficial for the prediction of pathological invasive factors.
P2–18
Drug discovery from plant-derived natural products as treatment against pancreatic cancer: Search for choline transporter inhibitors

(Department of Medical Oncology, University of Tokyo, Japan)

P2–19
Identification of this CTL1 and CTL2 as potential targets for pancreatic cancer therapy.

(Park Dental University, South Korea)

Pancreatic cancer is one of the most deadly of all types of cancer and is often difficult to detect. The currently reported five-year survival rate for pancreatic cancer is still extremely low. Early detection and improved treatment strategies are needed to improve the prognosis for this deadly disease.

Choline is an organic cation that plays a critical role in the structure and function of biological membranes. Intracellular choline accumulation through choline transporters is the rate-limiting step in phospholipid metabolism, and it is a prerequisite for cell proliferation. In this study, we examined the functional characterization of choline transporters in MIA PaCa-2 pancreatic cancer cells. Furthermore, we searched for compounds that inhibit choline uptake as well as cell proliferation in a plant-derived natural organic compound library. Choline uptake is Na+-independent and mediated by a single transport system. Choline transporter-like protein 1 (CTL1) and CTL2 mRNA are highly expressed. We found two hit compounds that inhibit choline uptake and cell viability from 480 plant-derived natural organic compounds. These hit compounds reduced cell survival and enhanced caspase-3/7 activity. Ceramide, which is an apoptosis-inducing molecule, also reduced cell viability and enhanced caspase-3/7 activity. These results suggest that CTL1 are functionally expressed in pancreatic cancer cells and are also involved in abnormal proliferation. Identification of this CTL1-mediated choline transport system provides a potential new target for cancer therapy. Furthermore, hit compounds inhibit CTL1 function, thereby activating the sphingomyelin metabolic system, and it is thought that apoptosis was induced by endogenous ceramide.

P2–19
Identification of this CTL1 and CTL2 as potential targets for pancreatic cancer therapy.

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Purpose

therapy for Stage IV advanced esophageal cancer

M1 - 5-FU + CDDP + radiation

Usefulness of DCF-

effect was not obtained in T4 cases. So we started the

treatment effect and prognosis for Stage IV esophageal
cancer was extremely poor, and in 2004 a

treatment was Low dose FP + radiation (FP-R) in

318

Purpose

therapy with Docetaxel added to FP therapy

In our institution, the chemoradiotherapy for Stage IV advanced esophageal cancer (T4, M1) has been performed. However, the prognosis of 5-FU+CDDP + radiation (FP-R therapy), which was the standard therapy, was extremely poor, and in 2004 a chemotherapy with Docetaxel added to FP therapy (DCF therapy) was started for improving the prognosis. DCF exerts an excellent effect on M1 cases, but sufficient effect was not obtained in T4 cases. So we started the chemoradiotherapy (DCF-R therapy) for local control in

2007, and obtained good results.

Background

In our institution, the chemoradiotherapy for Stage IV advanced esophageal cancer (T4, M1) has been performed. However, the prognosis of 5-FU+CDDP + radiation (FP-R therapy), which was the standard therapy, was extremely poor, and in 2004 a chemotherapy with Docetaxel added to FP therapy (DCF therapy) was started for improving the prognosis. DCF exerts an excellent effect on M1 cases, but sufficient effect was not obtained in T4 cases. So we started the chemoradiotherapy (DCF-R therapy) for local control in

2007, and obtained good results.

Purpose

We report Stage IV esophageal cancer cases and examine the best treatment at the present time by retrospectively comparing the results of different regimen.

Material and Methods

The targets were 86 cases diagnosed as Stage IV at the time of initial examination in 1998 to 2014 and treated at our institution. The treatments were Low dose FP + radiation (FP-R) in 1998-2003, DCF alone in 2004-2006, and DCF-R in 2007 and later. The irradiation range was including the main lesion, the N1and N2 lymph nodes and the lymph node of 1.5 cm or more in the FP-R group, and it was 3 cm above and below the main lesion and the range from 1.5 to 2.5 cm wide from the main lesion, and lymph nodes of 1.5 cm or more in the DCF-R group. In each case, the irradiation dose was set to 60 Gy in total.

Results

Stage IV cases was 39 : 10 : 57 in FP-R : DCF : DCF-R. Invasion into the large blood vessels was 18/39 (46%) : 2/10 (20%) : 13/57 (23%), invasion into the trachea and bronchi were 15 cases (38%) : 7 cases (70%) : 23 cases (40%), and invasion into both organs was 6 cases (15%) : 1 case (10%) : 3 cases (0.5%). Invasion into the large blood vessels was observed in the FP-R group, and invasion into the trachea and bronchi was observed in the DCF-R group. In the primary effect of treatment, CR was 1 case (3%) : 1 case (10%) : 20 cases (35%), PR was 18 cases (46%) : 7 cases (70%) : 30 cases %, and NC/PD was 20 cases (51%) : 2 cases (20%) : 7 cases (12%). One year survival rate was 21% : 10% : 66%, 5 years survival rate was 6.4% : 10% : 23.2%, median survival was 184 days : 191 days : 429 days.

Discussion

DCF-R therapy gave good results in the treatment effect and prognosis for Stage IV esophageal cancer with obvious significant difference compared to FP-R therapy and DCF therapy. Although it was slightly reduced in therapeutic effect in M1 cases, it was considered to be the best treatment at the present time.

P2-21

Differentiation of orbital lymphoproliferative diseases by metabolomics

(社会人大学院博士課程 1 年眼科学)

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(低侵襲医療開発総合センター)

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(眼科学)

【Purpose】Orbital lymphoproliferative diseases, particularly mucosa-associated lymphoid tissue (MALT) lymphoma and IgG4-related ocular disease (IgG4-ROD), have similar clinical and also histopathological features, and are therefore often difficult to differentiate. Metabolomics is a method of comprehensive analysis of
metabolites, and has recently been applied to search for biomarkers and elucidation of pathological conditions. In this study, we analyzed and compared IgG4-ROD and MALT lymphoma by metabolomics, which has not been reported previously.

【Methods】Six samples of orbital MALT lymphoma (mean age 62.3 years; 4 males and 2 females) and 11 samples of IgG4-ROD (mean age 64.8 years, 4 males and 7 females) were analyzed. Using liquid chromatography with time-of-flight mass spectrometry (LC/TOF-MS), lipid soluble metabolites were measured. Comparison was made using orbital adipose tissue of the same case as control. To eliminate the influence of individual differences, the two diseases were compared after determining the difference between the lesion and the control in each case.

【Results】Compared with orbital adipose tissue of the same case, significant differences in expression of 174 metabolites were observed in IgG4-ROD and significant differences of 132 metabolites were found in MALT lymphoma. In the comparison between IgG4-ROD and MALT lymphoma, significant differences in expression were observed in 12 metabolites. Principal component analysis confirmed that it was possible to differentiate among four groups: adipose tissue, tumor tissue, IgG4-ROD, and MALT lymphoma.

【Conclusion】Metabolomics may be useful for the differentiation of lymphoproliferative diseases in the orbit and may lead to elucidation of the pathogenesis of these diseases.

P2-22
LONG TERM CLINICOPATHOLIGICAL OUTCOME OF ENDOCOSIC RESECTION FOR PEDUNCULATED TYPE EARLY INVASIVE COLORECTAL CANCER

【INTRODUCTION】Despite the fact that the criteria is still not clear for additional surgery in pedunculated type invasive colorectal cancer treated endoscopically, only few long term studies have been done. Submucosal invasion limited to <1,000 μm, without lymphovascular invasion, poorly differentiated component and tumor budding is said to be a good candidate for endoscopic resection. This study was conducted to determine outcomes for pedunculated type early invasive cancer patient treated with endoscopy.

【METHODS】The study was carried out in a single center. We retrospectively reviewed the medical records of patient with pedunculated type early invasive cancer who underwent endoscopic procedure between October 1998 and October 2018. We examined pathological factors of each case, lymph node metastasis and recurrence from applicable cases.

【RESULTS】A total of 158 patients, 160 pedunculated type early invasive colorectal cancer were enrolled in this study. The study population include 122 men and 38 women with a mean age of 71 ± 12 years. The mean tumor size was 17 ± 6.7 mm, and the location was as follows; S/D/T/A : 135/10/6/5. As for the growth pattern, PG/NPG : 146 (91.2%)/14 (8.6%). Histopathologically, 138 (86.9%) tumors were well-differentiated and 22 (13.8%) were moderately differentiated adenocarcinoma. The mean SM invasion depth was 2,130 ± 1,618 μm. Among them 106 (66.3%) lesions
were diagnosed as head invasion and 54 (33.8%) were diagnosed as stalk invasion. There were 23 (14.3%), 17 (10.6%) and 24 (15%) positive case of lymphatic invasion, venous invasion and with poorly differentiated component, respectively. In 18 (12%) cases, budding was seen and there were 3 cases which the budding grade was over 2. Of all cases, 59 cases received additional surgical colectomy along with lymph node dissection. Among the lesions treated surgically, the overall incidence of lymph node metastasis was one (1.7%). 65 cases were followed up more than one year and was available for recurrence analysis. Among them 43 cases had endoscopic resection alone and 22 cases had endoscopic resection followed by surgical operation. There was no local recurrence seen in any of the cases. Average follow up period was 5.2 years. Including the additional surgery cases, the incidence of lymph node metastasis was low as 1.7%. There were some head invasion cases which didn’t undergo additional surgery even though the invasion depth met the criteria. None of these cases revealed recurrence.

**CONCLUSION**

We need to distinguish the additional resection criteria of pedunculated type carcinoma from non-pedunculated type carcinoma. There is a possibility that most pedunculated type early invasive colorectal cancers can be managed by endoscopic treatment alone. Further cases and long-term observation are needed.

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**P2-23**

**QUANTITATIVE NUCLEAR FEATURES OF HEMATOXYLIN-EOSIN SPECIMENS FROM INITIAL TRANSURETHRAL RESECTION FOR PREDICTING NON-MUSCLE INVASIVE BLADDER CANCER RECURRENCE**

（社会人大学院博士課程 3 年泌尿器科）

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Hashimoto Takeshi, Satake Naoya,
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Saito Akira, Watanabe Noriko, Kuroda Masahiko

【Introduction and Objective】 In non-muscle invasive bladder cancer, clinical management is often based on risk classification with limited subjective tools. Recent development in artificial intelligence and digital pathology has promoted the use of this technology in cancer diagnosis. Analysis of digitalized hematoxylin-eosin (HE) tissue section images contributes to quantitative evaluation of cancer lesion morphology. We aimed to develop a novel prediction model for intravesical recurrence based on computer measured nuclear morphological features in non-muscle invasive bladder cancer cases.

【Methods】 We investigated 30 patients diagnosed with non-muscle invasive bladder cancer. A pathologist annotated digitalized HE tissue slides for bladder cancer. Nuclei were segmented from the annotated region of interest (ROI). Following imaging processing techniques, we assessed 992 nuclear morphological features from each nucleus e.g., nucleus size, roundness, contour length, intra-nucleus texture data. To identify specific features that were useful for intravesical recurrence prediction, a multiclass stepwise discriminant analysis was done. We performed canonical discriminant analysis to obtain recurrence probability for each patient. We also applied the machine learning method, support vector machine (SVM), to 24 cases; we validated the model by testing 6 cases.

【Results】 From the digitalized HE tissue slide images,
317 ROIs were annotated. We examined 347,744 nuclei in total. Based on stepwise discriminant analysis, we selected 49 specific features. Canonical discriminant analysis showed a predictive accuracy of 100%. Table 1 shows results of the SVM model that used 64 images obtained from 6 patients; the accuracy, sensitivity, and specificity were 84%, 91%, and 73%, respectively. The predictive model showed that 8 and 3 images were false positive and false negative, respectively.

**Conclusions** Our results suggest that quantitative nuclear morphology analysis of bladder cancer has the potential to provide objective interpretation of nuclei heterogeneity and recurrence prediction.

**SOURCE OF FUNDING:** None

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**P2-24**

**Analysis of heterogeneity in uveal melanoma cell lines using flow cytometry**

（眼科）
○花地 欣也、臼井 嘉彦、後藤 浩

**[Purpose]** Recently heterogeneity in some malignant tumors has attracted much attention as a mechanism of resistance to treatment. In this study, we analyzed the heterogeneity in uveal melanoma cell lines using flow cytometry.

**[Methods]** Three uveal melanoma cell lines; 92-1, OMM1 and TMU（established in Tokyo Medical University）, were analyzed using flow cytometry after immunostaining (CD9, CD10, CD29, CD44, CD49b, CD49d, CD49e, CD49f, CD54, CD57, CD63, CD117, CD133, CD151, CD166, CD171, CD271, CD324 and A2B5). To identify cell surface markers for heterogeneity, we explored cell surface markers that can divide uveal melanoma cell line into 2 groups (positive and negative) by fluorescence intensity. Moreover, we co-cultured each uveal melanoma cell line (divided into positive and negative groups) and MART-1 specific T cells with melanoma antigen-specific cytotoxic T cells, and compared IFN-γ production between positive and negative cells.

**[Results]** Three cell surface markers; CD57, CD151 and CD271, were able to divide all cell lines into positive and negative groups based on fluorescence intensity. The production of IFN-γ decreased in CD57−, CD151+ and CD271+ cells compared to CD57+, CD151− and CD271− cells, respectively.

**[Conclusion]** These results suggest the existence of heterogeneity and populations of cells that are resistant to treatment in uveal melanoma cell line. Heterogeneity among melanoma cells may account for the finding of some uveal melanomas refractory to conventional treatment.

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**P2-25**

**CHARACTERISTICS OF ENDOSCOPIC FEATURES IN JUVENILE POLYPS IN ADULTS: NO LONGER REMOVAL OF POLyps?**

（社会人学院院博士課程 1 年消化器内科学）
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河合 隆

**[Background]** Juvenile polyps are the most common gastrointestinal polyps in children, but they are relatively rare in adults, and there are few collective reports of endoscopic features. Even in Japan, where Narrow Band Imaging observation and Magnifying Chromo-endoscopy have become common, accurate diagnosis is often impossible when encountered.

**[Aims and Methods]** We retrospectively evaluated 80 lesions in 77 cases of juvenile polyps of the colon and rectum resected endoscopically and diagnosed pathologically between January 2013 and October 2018 in our hospital. Of these, only 25 had a correct diagnosis of juvenile polyps.

We compared Group A (25 patients who could be diagnosed correctly) with Group B (55 patients who could not be diagnosed correctly), and investigated the causes of the incorrect diagnosis.
Results} Seventy-seven cases were male/female: 62 (80.5%) cases/15 (19.4%), median age 54 (27-85), and symptoms were present in only 8 (10%). The location was 61 polyps (76.3%) in the left colon (27 in the sigmoid colon, 27 in the rectum, and 7 in the descending colon) and 19 polyps (23.7%) in the right colon (13 in the transverse colon, 5 in the ascending colon, and 1 in the cecum). The median diameter of the polyp was 7 mm (range, 3-25 mm), and the macroscopic appearance was subpedunculated in 39 polyps (48.8%), pedunculated in 27 polyps (33.7%), and sessile in 14 polyps (17.5%). Redness was observed in 74 polyps (92.5%), erosion in 54 polyps (67.5%), and white coat in 34 polyps (42.5%), which corresponded to previously report endoscopic findings in juvenile polyps. Group A had 22 polyps (88.0%) in the left colon (14 in the rectum, 6 in the sigmoid colon, 2 in the descending colon) and 3 polyps (12.0%) in the right colon (2 in the transverse colon, 1 in the ascending colon), with a median polyp diameter of 8 mm (4-25 mm), macroscopic appearance was subpedunculated in 13 polyps (52.0%), pedunculated in 9 polyps (36.0%), and sessile in 3 polyps (12.0%). Redness was observed in 24 polyps (96.0%), erosion in 21 polyps (84.0%), and white coat in 16 polyps (64.0%). On the other hand, group B had 39 polyps (70.9%) in the left colon (21 in the sigmoid colon, 13 in the rectum, 5 in the descending colon) and 16 polyps (29.1%) in the right colon (11 in the transverse colon, 4 in the ascending colon, 1 in the cecum), with a median polyp diameter of 9 mm (3-25 mm), macroscopic appearance of 26 subpedunculated (47.3%), 18 pedunculated (32.7%), and 11 sessile (20.0%). Redness was observed in 50 polyps (90.9%), erosion in 33 polyps (60.0%), and white moss in 18 polyps (32.7%). There were no significant differences between the two groups in the location, diameter, macroscopic appearance, and presence or absence of redness of polyps. But polyps without erosion or white coat were misdiagnosed with a significant difference (p<0.05). The most common false diagnoses were adenomas (37 polyps, 67.3%), polyps (9 polyps, 16.3%), inflammatory polyps (6 polyps, 10.9%), and early colorectal cancer (3 polyps, 5.5%).

Conclusion} In our study juvenile polyps without erosion or white coat were more likely to be misdiagnosed as adenomas. Thus when the endoscopist encounter a lesion, which is difficult to diagnose, it is important keeping juvenile polyp in mind, especially when there is duct dilation, which suggest strongly of juvenile polyp.

P2-26
Clinical significance of urinary titin in cancers of the digestive system

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Purpose} Regarding cancers of the digestive system, depending on the condition thereof, sarcopenia can often be seen prior to surgery. Having sarcopenia prior to surgery is known to greatly affect life prognosis. Sarcopenia is evaluated by skeletal muscle mass and biochemical examinations, etc., with the development of a new biomarker that reflects the condition of muscle catabolism expected. Titin, which is a giant elastic muscle protein existing in skeletal muscle or sarcomeres, which are cardiac muscle cells, is known to exhibit a high value among patients with myocardial infarction or muscular dystrophy. In this study, we measured urinary titin to analyze the relation with the blood test indexes of sarcopenia and examined if it is effective in evaluating sarcopenia.

Method} The subjects were 51 patients with cancers of the digestive system hospitalized in the main hospital, including 31 males and 20 females, with a mean age of 72 (35-85). The breakdown of the diseases was 20 patients with gastrointestinal cancer and 31 patients with hepatic, biliary and pancreatic diseases. We made a comparison between the items of blood biochemistry testing and urinary titin.

Result} Titin exhibited negative correlations with albumin (r=-0.096, p=0.001), prealbumin (r=-0.644,
We reported that tyrosine kinase inhibitors (TKIs) including gefitinib (GEF) and imatinib (IMA) induce autophagy in many types of cancer cells. We also reported that GEF induces autophagy in EGFR knock-out A549 cells. This indicated GEF induced-autophagy is independent of EGFR inhibition. Therefore, other target(s) might be involved in TKI-induced autophagy. We here compared autophagy inducing ability of various TKIs by establishment of the quantitative autophagy flux assay system.

We transfected GFP-LC3–mCherry–LC3△G plasmid (a kind gift from Prof. Mizushima and modified) to A549, PC-9 and CAL27 cell lines and generated stable expression clones. Monitoring the fluorescent ratios of GFP/mCherry by IncuCyte Cell Imaging System enabled us to evaluate the autophagy flux condition during exposure to TKIs: GEF, osimertinib (OSI) and lapatinib (LAP) for EGFR-TKI, lenvatinib (LEN) and sorafenib (SOR) for VEGFR-TKI, IMA and dasatinib (DAS) for ABL- and KIT-TKI, and tivantinib (TIV) for HGFR-TKI.

Among eight TKIs, DAS, GEF and SOR exhibited the prominent autophagy inducing effect in A549 and PC-9 cells. In CAL27 cells, IMA, SOR and LEN exhibited autophagy induction, but less strong, probably because of upregulation of endoegenous autophagy. We also reported that macrolide antibiotics including AZM have an effect of blocking autophagy. Combined treatment of either DAS, GEF or SOR with AZM all resulted in pronounced cytotoxicity in A549 cells. Thus, autophagy induction by TKIs appears to function as cytoprotective. Blocking autophagy appears to enhance the therapeutic effect of TKIs in various cancers.

**P2-28**

**Comparison of amino acid profile between non-tumor and tumor regions in the patients with lung cancer**

(社会人大学院博士課程 4年呼吸器・甲状腺外科学)

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池田 良彦

【Background】Recently, the comprehensive amino acid (AA) profiling in blood has been put to practical use for cancer screening, because cancer cells have the specific energy metabolism using AAs. Because the AA metabolism has been unclear in cancer parts of the patients, this study purposed to compare the AA profile between the non-tumor and tumor regions within the same patients suffered from lung cancer.

【Methods】Non-tumor and tumor regions in lung tissue were harvested from the 14 patients with small cell cancer who underwent lung resection under obtaining informed consent. The AAs profiling in both the
regions were quantified by LC-MS/MS system.

**Results**  In category by the energy metabolism, the glucogenic AAs including the pyruvate precursors (Ser, Gly, Thr, Ala, Trp), the α-ketoglutarate precursors (Glu, Gin, Pro) and the succinyl-CoA precursors (Val, Ile, Met) were significantly increased in the tumor region compared to those in the non-tumor region. On the other hand, there was no significant difference in the acetyl-CoA precursor of the ketogenic AAs (Leu, Lys, Tyr) between both the regions. Glucogenic/Ketogenic AAs ratio could separate clearly the non-tumor and tumor regions without value overlaps (non-tumor: 1.9±0.1, tumor: 5.6±0.3, \( P<0.0001 \)).

**Conclusion** In the lung cancer, the significantly increased glucogenic AA levels might be due to the enhanced uptakes from circulating fluids for the gluconeogenesis. This result suggested that the glucogenic AAs, but not the ketogenic AAs, would be predominantly utilized for the proliferation of lung cancer.

### P3-29

**分子イメージングによる PD-1-PD-L2 を介する T 細胞抑制機構の解明**

（研究生：免疫学、慶応義塾大学：呼吸器内科）

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横須賀 忠

【背景】免疫チェックポイント阻害剤である抗 PD-1 抗体は、進行・再発非小細胞肺癌に対して画期的な治療効果をあげている。しかしバイオマーカーである腫瘍組織の PD-L1 発現量が、薬効と必ずしも相関しない例を認める。これは近年報告される腫瘍組織中の PD-L2 と PD-1 の相互作用による可能性がある。当研究室では先端的イメージング解析を用いて、T 細胞と抗原提示細胞の接着と同時に形成され、TCR 下流のキナーゼ、アダプター分子の挙動と一致する「TCR マイクロクラスター」を同定した。また PD-1 が PD-L1 存在下で TCR マイクロクラスターと共局在し、PD-1 が recruit する SHP2 が TCR マイクロクラスターに集合する活性化シグナル伝達分子を脱リン酸化することで、T 細胞機能を抑制することを見出した。

【目的】イメージングを用いて PD-1-PD-L2 経路を解析し、抗 PD-1 抗体の機序を解明する。

【方法】PD-L2 存在下で PD-1 マイクロクラスター形成、および TCR マイクロクラスターとの局在性を確認した。また PD-1-PD-L2 マイクロクラスター形成時における SHP のイメージング、および TCR 下流分子を生化学的評価した。

【結論】PD-L2 分子のイメージングを通じて、PD-1 シグナル伝達機構を解明している。

### P3-30

**CHCHD10 遺伝子変異による ALS/FTD 発症メカニズムの解明**

（薬理学）

○草苂 伸也、小林 悠理、鈴木 宏昌

松岡 正明

※抄録の掲載を辞退する。

### P3-31

**Experience of bullying in childhood affects depression in adulthood via neuroticism ; a structural equation modeling study**

（社会人大学院博士課程 4 年精神医学、成仁病院）

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井上 猛

（成仁病院）

片山 成仁

※抄録の掲載を辞退する。
P3-32

Hemorrhage in the Brain in Patients with Diabetes Mellitus: A Retrospective Study

(Internal Medicine)


【目的】To investigate the incidence of hemorrhage in the brain in patients with diabetes mellitus and its relationship with the disease stage.

【方法】A total of 150 patients with diabetes mellitus were retrospectively reviewed. The incidence of intracerebral hemorrhage (ICH) and subarachnoid hemorrhage (SAH) was calculated. The relationship between the diabetes stage and the incidence of hemorrhage was analyzed.

【結果】The incidence of ICH was 10.7% and that of SAH was 2.0%. The incidence of hemorrhage was significantly higher in patients with diabetes stage 3 or higher (p<0.05). The incidence of hemorrhage was also significantly higher in patients with diabetes stage 4 (p<0.01).

【結論】The incidence of hemorrhage in patients with diabetes mellitus is significantly higher in patients with diabetes stage 3 or higher. Further study is needed to clarify the mechanism of hemorrhage in patients with diabetes mellitus.

P3-33

Classification of clinically diagnosed Alzheimer disease associated with diabetes based on amyloid and tau PET

(Kakusa University, Graduate School of Medicine)


【目的】To classify patients with Alzheimer disease (AD) associated with diabetes mellitus (DM) into subgroups based on amyloid and tau accumulation patterns on positron emission tomography (PET) and examine the differences in clinical features and brain imaging findings between subgroups.

【方法】Patients with AD associated with DM were classified into three subgroups based on amyloid and tau accumulation patterns on PET. The A+/T+ group showed less well-controlled glycemia, more frequent posterior cerebral hypoperfusion, and more severe medial temporal lobe atrophy. The A−/T− group showed better glycemic control, less frequent posterior cerebral hypoperfusion, and less severe medial temporal lobe atrophy. The A−/T+ group showed less frequent posterior cerebral hypoperfusion and less severe medial temporal lobe atrophy. The A+/T+ group showed more frequent posterior cerebral hypoperfusion and more severe medial temporal lobe atrophy.

【結果】The A+/T+ group showed more frequent posterior cerebral hypoperfusion and more severe medial temporal lobe atrophy. The A−/T− group showed better glycemic control, less frequent posterior cerebral hypoperfusion, and less severe medial temporal lobe atrophy. The A−/T+ group showed less frequent posterior cerebral hypoperfusion and less severe medial temporal lobe atrophy.

【結論】Patients with AD associated with DM can be classified into three subgroups based on amyloid and tau accumulation patterns on PET. The A+/T+ group showed more frequent posterior cerebral hypoperfusion and more severe medial temporal lobe atrophy. The A−/T− group showed better glycemic control, less frequent posterior cerebral hypoperfusion, and less severe medial temporal lobe atrophy. The A−/T+ group showed less frequent posterior cerebral hypoperfusion and less severe medial temporal lobe atrophy.

Although type 2 diabetes mellitus (DM) is a risk factor for the development of dementia, underlying brain pathologies and mechanisms vary. A classification of patients with clinically diagnosed Alzheimer disease (AD) associated with DM into subgroups based on amyloid and tau accumulation patterns on positron emission tomography (PET) and the examination of differences in clinical features and brain imaging findings between subgroups can provide valuable information for the management of these patients. The A+/T+ group showed less well-controlled glycemia, more frequent posterior cerebral hypoperfusion, and more severe medial temporal lobe atrophy. The A−/T− group showed better glycemic control, less frequent posterior cerebral hypoperfusion, and less severe medial temporal lobe atrophy. The A−/T+ group showed less frequent posterior cerebral hypoperfusion and less severe medial temporal lobe atrophy. The A+/T+ group showed more frequent posterior cerebral hypoperfusion and more severe medial temporal lobe atrophy. The A−/T− group showed better glycemic control, less frequent posterior cerebral hypoperfusion, and less severe medial temporal lobe atrophy. The A−/T+ group showed less frequent posterior cerebral hypoperfusion and less severe medial temporal lobe atrophy.
is strongly associated with DM-related metabolic
abnormalities. This study highlights the identification
of a novel dementia subgroup (diabetes-related
dementia) for considering an appropriate therapy and
care in clinical practice.

P3-34
東京都多摩地域における頭蓋外頸動脈閉塞症
に対する発症後 6-24 時間の endovascular ther-
apy — 東京都多摩地区血栓回収療法レジストリー
(TREAT; Tama-Registry of Acute endovascular
Thrombectomy) から —

(八王子：救命救急センター)
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【背景】頭蓋内頸動脈閉塞症に対する発症 6-24 時
間の機械的血栓回収術の有用性が示されたが、急性
頭盖外頸動脈閉塞症のendovascular therapy
(EVT)のエビデンスは乏しい。

【方法】TREAT に過去 3年間登録された機械的血
栓回収術 586 例を対象に、発症前 modified Rankin
score (mRS) 2以上の急性頭盖外頸動脈閉塞症
に対する発症 6-24 時間の EVT 症例を抽出した。有
効性評価は、DAWN trialを参考に 90日後 utility-
weighted mRS を算出し、90日後 mRS 0-2を機能
的自立とした。

【結果】15 例 (mRS 0: 10 例、mRS 1: 4 例、mRS 2:
1 例)を認め、平均年齢は 77 歳。来院時 NIHSS は
19 点 (中央値: 15-21 点)、DWI-APECTS は 6 点 (中
央値: 6-7 点)、発症/最終目撃から病着は 601
分 (中央値: 490-686 分)であった。治療内容は血
栓回収術 11 例、血管形成術 4 例 (ステント: 3 例、
その他: 1 例)であった。発症/最終目撃から再開
通まで 693 分 (中央値: 647-819 分)を要し、
mTICI 2b以上の有効再開通率は 67%であった。90
日後のutility-weighted mRS は 4.1、機能的自立は
33%の有効性であった。安全性として 24 時間の症
候群頭蓋内出血はなく、90日後死亡率は 7%であっ
た。

【結語】発症 6時間以内の頭蓋外頸動脈閉塞症に
に対する EVT は、25-44%の機能的自立と報告されて
いる。本邦における発症後 6-24 時間の急性頭盖
外頸動脈閉塞に対する EVT の有効性は他機関が
示唆した。

P3-35
III 度熱中症で非閉塞性腸管虚血 (NOMI; non-
occlusive mesenteric ischemia) が併発しプロス
タグランジエ E1 動注で改善した 1 例

(救急・災害医学)
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河井健太郎、織田 順

症例は63歳の男性。サウナ入浴中に意識障害をきたし救急搬送された。
来院時は高度意識障害と血圧低下を認め、人工呼吸器管理・大量輸液・昇圧剤を要した。また急性肝不
全に伴う循環不全が持続し、凝固異常や血小板減少
を認め、第 5 病日に下血を認め、下部消化管内視
鏡検査で粘膜の虚血性変化と、造影 CT で右半結腸
の広範囲に及ぶ造影不良を認めた。同日に血管造影
検査も施行し非閉塞性腸管虚血と診断した。全身状
態改善のため高侵襲な外科的切除ではなく、上腸間
膜動脈へ留置したカテーテルから PGE1 動注療法を
選択した。その後腸管虚血に移行することなく第 7
病日頃から循環動態及び意識障害は徐々に改善して
いった。同時期に経腸栄養も開始した。第 10 病日に
上部消化管内視鏡検査施行したところ胃・小腸粘
膜に出血性変変や潰瘍変化はなかった。同日に抜管
し第 17 病日に転院となった。III度熱中症で急性肝
不全から NOMI を併発し、PGE1 動注療法が奏効し
た1例を経験したので、若干の文献的考察を交えて
報告する。
P3-36
意識障害により上肢コンパートメント症候群を併発したクラッシュ症候群の一例

（救命救急センター）
○米山 崇恵、下山京一郎、東 一成
三浪 陽介、織田 順

【症例】71歳男性
【現病歴】自宅で倒れている所を発見され救急要請された。救急隊現着時、血圧測定不能であり三次選定され当院救命救急センターへ搬入された。
【経過】搬入時、血圧80/40mmHg、脈拍42/分と低血圧、徐脈を認めた。呼吸はいびき様でSpO2 98%（10L）、体温35.4℃であった。意識はJCS 20で舌根沈下を認め挙弁した。心電図はwide QRSでKは7.8mEq/Lと高値であった。右半身に水泡形成を伴う著明な圧摺を認め、CKは18万IU/Lと高値であった。ミオグロビン尿も認め、クラッシュ症候群と診断し急速補液とRRTを開始した。右上肢の腫脹が著明で筋区画内圧を測定した。複数箇所で50mmHgを超えており、上肢コンパートメント症候群と診断した。手掌～上腕まで広範囲な膿瘍切開を施行し救命センターへ入室となった。入室後、CKは28万IU/Lまで上昇したがAKIは改善し第18日にRRTを離脱した。創部に対しては植皮術、NPWTを施行した。拘縮や機能障害を残さず良好な治瘉を得て第54日に転院した。
【考察・結語】上肢コンパートメント症候群は海外を含めてまだ報告は少ない。原因として骨折や外傷が多いとされるが、今回は先行する意識障害に起因した上肢コンパートメント症候群を経験した。意識障害がある患者は疼痛等の訴えが乏しくなるため、より積極的に筋区画内圧を測定することが重要であると考えられた。

P3-37
S状結腸穿孔術後のOpen Abdominal Managementが奏功した症例

（救命センター）
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谷野 雄亮、内田健一郎、内田康太郎
鈴木 彰二、河井健太郎、織田 順

【症例】60代、男性。
【現病歴】自宅で突然の腹痛を自覚し、近隣住人が119番通報し、当院へ救急搬入となった。
【既往歴】高血圧、腎硬化症で透析加療中
【臨床経過】病着時、発熱あり、呼吸様式は問題なく、SpO2 93%（room air）であった。循環は血圧80/41mmHg、脈拍92/分、顔面蒼白で全身冷汗著明でありショック状態であった。意識レベルはGCS E3V5M6、体温35.8℃であった。下腹部痛を認め、CTを撮影し下部消化管穿孔と診断、同日緊急でS状結腸切除術・S状結腸人工肛門造設術施行した。入院第8病日に、造管腸管の再穿孔のため、穿孔部を縫合し、前頭の頭側にS状結腸人工肛門を再造設した。第18日に人工肛門壊死を認めたため、S状人工肛門を閉鎖して回腸人工肛門造設術施行した。その際に正中創部閉鎖困難であったため、open abdominal management、VAC療法を開始した。第45日に感染コントロールがつくと判断し、閉創した。全身状態改善し、第95病日にリハビリ目的に転院となった。
【結論】S状結腸穿孔症例の長期間のopen abdominal managementとVAC療法を併用することで、良好な転帰を示した症例を経験したのでその治療について文献的考察を加え報告する。
P3-38
Impact of sleep-disordered breathing on ventricular tachyarrhythmia after left ventricular assist device implantation

(專攻生：循環器内科)
○熊井 優人
(循環器内科)
近森大志郎

※抄録の掲載を辞退する。

P3-39
Do the assisted reproductive technology children remain big at 6 years of age?

(産科婦人科学)
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小鳥 淳哉、西 洋孝

【Objective】About 50,000 children have been born after assisted reproductive technology (ART) a year in Japan. Although the potential health risks associated with the ART have been concerned in the world, we have only limited data as to their long-term health and development. To investigate the differences among children born by fresh embryo transfer (Fresh ET), those by frozen embryo transfer (FET) and naturally conceived (NC) children, anthropometry of children at 6 year of age were analyzed.

【Method】Prospective cohort study had been started from 2010 for infants originated from ET in 2008. Structured questionnaires had been sent to their parents of 8,356 children. Weight, height, and body mass index (BMI) of each group at birth and 6 years of age were calculated by least squares method and Dunnett’s method as the adjustment factors.

【Results】Parents of 4,437 children replied to the questionnaire and the data of 1,800 singletons fulfilled our criteria. Main confounding factors were parental anthropometry, nutrition method at one month, paternal allergy and asthma, maternal weight gain during pregnancy and infertility period at 6 years of age.

After controlling for these factors, FET infants were 70.4 g heavier than NC infants in boys at birth. Furthermore, ART infants were taller than NC infants in boys and FET infants were also 0.6 cm taller than NC infants in girls at birth. Although it appeared that weight of ART children were 800-900 g heavier than NC children in girls, weight of the difference disappeared in FET children in boys at 6 years of age. ART children were taller than NC children in both sexes at 6 years of age.

【Conclusion】After adjusting confounding factors, including parents’ anthropometry, the weight and height of ART groups were larger than those of NC group at 6 years of age. However, there was no significant difference in BMI.

P3-40
CVC 插入に伴う感染性血栓に対して内科的治療を選択した一例

(救急センター)
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樫井 雅子、上田 康弘、東 一成
織田 順

【背景】血栓性静脈炎は稀な疾患であるが、昨今 CVC 插入など医原性の血栓性静脈炎が増加している。治療法は抗凝固薬や血栓除去術等の適用など未知の部分が多い。

【症例】88 歳男性。意識障害で当院救急センターに搬入となった。意識障害、循環不全を認めたため第 1 病日に右内頸静脈より CVC 插入とした。全身状態は改善したため CVC 抜去となったが第 5 病日に再度循環不全を認めたため左内頸静脈より CVC 再挿入となっている。第 10 病日にカテーテル関連血流症、MRSA 菌血症を発症した。CT では CVC 抜去部に血栓を認め、その周囲に炎症を示唆する所見を認めたため血栓性静脈炎と診断した。また肺野に塞栓を示唆する結節影を認め SE も発症したと考える。治療は抗生物質を計 6 過間投与、抗凝固療法を施行した。血栓は残存するものの感染コントロールに成功した。

【考察】血栓性静脈炎は壊死血栓に感染を生じる場合や感染を契機に血栓を形成する事も考えられる。
P3-41
What is the difference of surgical outcomes between individuals carrying TGFBR1 and TGFBR2 mutation in Loeys-Dietz Syndrome?

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[Objectives] This study aims at reviewing the clinical results of patients with Loeys-Dietz syndrome (LDS) and clarifying the differences of surgical outcome between patients with transforming growth factor-beta receptor (TGFBR) 1 and TGFBR2 mutations.

[Methods] Of 304 patients <50 years having undergone surgery for thoracic aortic diseases between 1998 and 2015, 22 patients (7.2%) having LDS with TGFBR1 (n=11) and TGFBR2 mutations (n=11) were enrolled in this study. The clinical courses including the surgical outcome were investigated. In the histological examinations, cystic medial necrosis (CMN) was classified into three grades according to the degree of cystic area.

[Results] The freedom from aortic reoperation at 5 years were lower in TGFBR2 group (36%) than TGFBR1 group (60%) (p=0.17). In the sub-analysis, the freedom from aortic reoperation at 5 years was significantly lower in female patients carrying TGFBR2 mutations (t-TGFBR2, n=6) (33%) than the others (n=16) (58%) (p=0.08). The freedom from aortic dissection after the initial surgery at 5 years was significantly lower in f-TGFBR2 (50%) than the others (83%) (p=0.025). All specimens (100%: 10/10) of the aorta with TGFBR2 mutations revealed grade III CMN. In contrast, 56% (5/9) of the aorta with TGFBR1 mutations showed CMN (p=0.033), and only one specimen (11%: 1/9) of them revealed grade III CMN (p<0.001).

[Conclusions] The aortic reoperation was more frequent in LDS with TGFBR2 mutation than that of TGFBR1 mutation, and the postoperative aortic dissection was also more frequent in the females with TGFBR2 mutations than the others. The specimens of the aorta with TGFBR1 mutations revealed grade III CMN in the minority, compared to those of TGFBR2 mutations.

P3-42
Tracheocutaneous fistula closure using double piled V-Y advancement flap of platysma

(茨城：形成外科)
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(形成外科学)
井田夕紀子、松村 —
Objective

The objective of this study is to duplicate the haloperidol-induced catalepsy using zebrafish for revealing the association between antipsychotics and unexpected physical dysfunctions, that could trigger fatal accidents.

[Methods] Animal; zebrafish larvae (Danio rerio). Drug; haloperidol. Device; a high-throughput tracking system and a software tool designed for investigating a scope of larvae parameters.

[Results] This study revealed a significant worse performance in the activity for larvae treated with haloperidol when compared to the non-treated. In result, we duplicated the catalepsy induced by haloperidol in zebrafish larvae.

[Conclusion] When patients with schizophrenia got suspicious case of catalepsy while driving followed by fatal car accidents, it needs to prove the causal association with the death by illness or the death by accident. We consider that it is important for forensic medicine to reveal inquest into the cause of deaths until the presence or absence of any correlation is firmly established.

P3-44
Research into the role of the family doctor during response to an emergency for patients receiving at-home care: Phase 1

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　大滝 純司

Qualitative investigation of differences in understanding between parties involved in at-home care was conducted as part of research into reducing the burden on family doctors during emergency responses for patients receiving at-home care.

Ten individuals with various occupations and roles were selected using theoretical sampling from parties involved in at-home care (including doctor(s), patient(s), families, and care providers). Semi-structured interviews discussed experiences with and understanding of at-home care and response during emergencies.
Interview recordings were transcribed for analysis. Interview topics included emergency house calls, nursing at home, telemedicine, and the role of family doctors. One hundred twenty questions across all categories were identified from candidate questions for questionnaire-based research covering cost burdens, concerns about family doctors, information sharing, and prior explanations of terminal-stage symptoms. Reasons given for why it felt wrong to contact doctors included “I feel bad about bothering the doctor”. When family doctors cannot respond in an emergency, the answers showed that response by another healthcare provider would be accepted “if information was shared”.

We observed differences of opinion on emergency response between healthcare providers and patients/families. To reduce the burden on family doctors when responding to emergencies for patients receiving at-home care, the items elucidated through this research should be used in questionnaire-based research to quantify the understanding of all parties involved.

P3-45
The availability of screening tests of risk assessment of VTE by Caprini Risk Score ～A retrospective study of patients who underwent Total Knee Arthroplasty～

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三木 保

【OBJECTIVES】The aim of this study is to investigate whether Caprini Risk Score (CRS) is available for high risk patients of Japanese postoperative venous thromboembolism (VTE). We retrospectively investigated patients undergoing total knee arthroplasty (TKA). Our goal is to create an evaluation form of the screening test that the patient answers, for example a patient-complemented CRS in Japanese.

【METHOD】We investigated 181 cases who underwent TKA at A hospital from January 2015 to May 2017 using the medical record. The survey contents are 39 items of CRS before undergo TKA, whether there was VTE in the lower extremity vessel ultrasonography after undergo TKA, and the VTE prophylaxis that patients received during the perioperative period. The obtained scores were calculated and compared to incidence of VTE.

【RESULT】65 patients (35.9%) had developed VTE after TKA. No patients with a score of 7 and below, all the patients with VTE had a high score of 9 points or more. Patients with VTE had an average score of 10.8, and the patients in 36.5% with a score ≥9 developed VTE.

【CONCLUSION】The following two points were found out about the availability of discrimination of Japanese VTE high risk patients by the Caprini Risk Score.
1）Modify CRS for Japanese people.
2）To improve items and scores to distinguish high and highest.
P3-46
東京医科大学における DREEM (Dundee Ready Education Environment Measure) を用いた学習環境調査の実施と学生による評価

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山崎 右花

【背景】 東京医科大学では、医学科学生の学習環境を評価するために、2013 年度から DREEM による調査を実施してきた。さらには、2017 年度より、他学も含めた共同研究として本調査を発展させた。本研究では、2018 年度の東京医科大学における調査結果を分析する。

【目的】 Dundee Ready Education Environment Measure（DREEM）を用いて東京医科大学医学部医学科の学習環境の状況を把握し、本学の医学教育改善への視座を得る。

【方法】 2018 年度の調査時期は 2017 年 12 月から 2018 年 1 月である。調査対象は、医学科 1 から 6 年生 748 名である。オリエンテーション実施時、授業後、試験終了後などの時間に、教育 IR センター員が教室に出向いて調査を実施した。学年の回答率は 93.3% であった。DREEM の 50 項目（例えば、「講義や実習に積極的に参加するように促される」）を記載した質問紙を配布し、「強く思うようから「全くそう思わない」と 5 段階で評定させ、回収した。

【結果】 5 段階の評定に「4」から「0」の得点を配し、集計と分析を実施した。全学年の平均得点は、126.2 点（50 項目×4 点=200 点満点）であった。さらに、学年と下位領域（学生の学習に対する認識、学生の先生に対する認識、学生の学習に対する認識、学生の社会的な自己認識、学生の環境に対する認識、学生の社会的な自己認識、の 5 領域）を要因とした分析を実施した。学年では、2 年生の得点が他学年と比較して高い傾向にあった。下位領域では、学生の社会的な自己認識が、他の下位領域よりも低い傾向にあった。

【考察・結論】 学年ごと、下位領域ごとに差異が見られる。学習環境に対する学生の認識の特徴が明らかになった。本調査の結果から、本学の長所と短所を認識し、教育環境の見直しにつなげるにかかって行くことが重要であると考えられる。

P3-47
医学科導入を念頭に置いた看護学科におけるブレンド型反転授業の試み

（産科婦人科学）
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（医学教育学）
油川ひとみ、三苫 博

【緒言】 学生が習得すべき医学情報の加速化的増大に加え、臨床実習時間の確保により、従来の全体講義に代表される行動主義的医学教育では現在の医学教育に応じきれないようになっている。その対策として産科婦人科学分野では、かねてより医学科・看護学科の系統講義にアクティブ・ラーニングの導入を検討してきた。その端緒として、我々は 2018 年度の看護学科講義で e ラーニングを利用した自宅学習と対面型講義における知識の確認・問題解決型授業のハイブリッドであるブレンド型反転授業（Blended Flipped Classroom；BFC）を導入したので、看護学科での実践を通して認知領域での学習効果と今後の改善点を検討した。

【対象・方法】 本学看護学科 2 年生を対象に、従来の全体講義を行った 2014−2017 年の各年度と BFC を行った 2018 年度の学期末試験における平均値、最低点、得点率 60% 以下であった学生の割合を比較し、BFC の有用性を検討した。[結果] 2018 年度の成績は 2014−2017 年の各年度の成績よりも有意に上昇した（平均点：39.3, 68.4, 56.6, 57.2 vs 78.0, (25)
P3-48

eポートフォリオは「知識基盤型社会」を生きる学生の成長の力になれるか

（医学教育学）
○油川ひとみ，青木 昭子
　ブルーベルマンスラウール，三苫 博
山科 章
（産科婦人科学）
野平 知良
（耳鼻咽喉科・頭頸部外科学）
清水 顕
（精神医学）
市来 真彦
（腎臓内科学）
長岡 由女
（血液内科学）
赤羽 大悟
（医療の質・安全管理学）
三島 史朗
（臨床検査医学）
天野 景裕
（糖尿病代謝内分泌リウマチ膠原病内科学）
　　太田恒一郎
（泌尿器科学）
　　中神 義弘

フォリオの日誌を全科で使用可能としている。指導
教員が学生の日々の省察を記録した日誌にコメント
を書き「足場かけ」を行うことで学生の生涯学習の
礎としてのコンピテンシーの育成を図っている。ま
た、電子化された記録を残すことは学習のエビデン
スとして学生の財産となる。しかし、この教育方法
は臨床・研究・教育をこなす医科大学の教員には大変
負担の大きいのも事実である。それゆえに学習過程
のみならず教育効果の見える化も必要と考え、e
ポートフォリオを用いた指導が学生の成長の力になり
得るのか調査した。

【方法】　2018年度の臨床実習の学生（医学科4-5
年生112名，期間：2018年1月～12月）のeポート
フォリオの記載の割合と記載された動詞を成長段
階の測定のために3段階に分けてテキストマイニング
を行った。調査は日誌数とコメント数の調査と全
体のテキストから動詞のみを抽出して行った。また
各科で行ったeポートフォリオ使用のアンケート結
果をまとめた。

【結果】　日誌の記載数は教員のコメントが多い診療
科に多かった。アンケートでもコメントが多い科に「主
体的な学びができた」「学習の役に立った」「教
員との距離が近くなった」などの評価が高かった。
動詞は、いわゆる守破離のプロセスでは学生が「守」
の指導教員の監督指導下での実習および学習が行わ
れていることを示しており，臨床実習の1年間では
概ね「守」の段階にとどまったことが分かった。

【考察】　今回の調査では指導教員の熱意がeポート
フォリオの学生の記載数および学習満足度に反映さ
れていること，また，動詞を計測することで学生の
成長段階を把握できる可能性が示唆された。今後学
生の成長段階に応じた指導に結びつけて行くことが
のぞまれた。
P3-49
Construction of a factorial model for medication adherence in patients with chronic diseases receiving home care services

(Aim) This study aimed to construct a factorial model for medication adherence in order to examine the support for taking medications in patients with chronic diseases receiving home care services.

(Method) The participants were 460 of the outpatients having chronic diseases. A self-administered questionnaire survey, which consisted of 74 items based on a composition concept of medication adherence factors, “Details of treatment/prescription”, “Attributes/Individual characteristics”, “Habits of daily life”, “Potential of continuously taking medication”, was conducted among the outpatients. And the items on the medication adherence scale were also gathered. Analysis methods were multivariate analysis and structural equation modeling (SEM).

(Result) A total of 436 valid responses were obtained. The results of analysis showed that the following items were mutually associated and had influences on “Medication adherence” and “Potential of continuously taking medication”: “Presence or absence of taking medication for ≥ 10 years”; “Presence or absence of one-dose package”; “Ability of hearing of a talk with a person”; and “Eating regularly.” In addition, “Potential of continuously taking medication” was found to influence “Medication adherence.” The fit of the model was as follows: $\chi^2 = 6.497$, df=7, $p=0.483$, resting metabolic rate (RMR)=0.230, goodness of fit index (GFI)=0.994, adjusted goodness of fit index (AGFI)=0.982 comparative fit index (CFI)=1.000 root mean square error of approximation (RMSEA)=0.000 Akaike information criterion (AIC)=34.497 and rescaled Akaike’s information criterion (CAIC)=102.980.

(Conclusion) The study was able to construct a factorial model for medication adherence. It was shown that support for taking medication might be available for enhancing the “Potential of continuously taking medication.”

P3-50
Prediction of Organ Injury by Measuring Venous Lactic Acid Levels of Patients Presenting to the Secondary Emergency Department

(Background and Objectives) In intensive care, arterial lactic acid values reflect the severity of shock, and are hence considered useful for predicting organ damage. However, in the secondary emergency department, more noninvasive methods of venous blood sampling is often performed. Therefore, we examined whether organ damage could be predicted from venous blood lactic acid values.

(Methods) We evaluated venous blood lactic acid values, and presence/absence of sepsis and other diseases, in 170 consecutive patients who underwent venous blood gas analysis at the secondary emergency department of single facility for 3 months. Sepsis was diagnosed according to the definition of Sepsis-3.

(Results) Venous blood lactic acid values were higher in the sepsis group than in the non-sepsis group, which did not contradict previous findings ($p=0.013$). Although patients with epilepsy, acute alcohol intoxication, and hyperventilation tended to have higher in lactic acid values than the sepsis group, the difference were not statistically significant ($P$ values: 0.80, 0.65, and 0.78, respectively).

(Conclusions) In patients with epilepsy, acute alcohol intoxication, and hyperventilation, the increased consumption of glucose in cells, decreased lactic acid metabolism owing to hepatic dysfunction from acute alcohol poisoning, and, a reduction in oxygen supply, respectively, were thought to be the causes of the increased lactic acid levels. However, organ dysfunc-
Venous Catheter Infection: A Clinical Comparison of Infections Caused by Methicillin-Resistant and Methicillin-Susceptible Strains

(P3-51)
Staphylococcus aureus Bacteremia due to Central Venous Catheter Infection: A Clinical Comparison of Infections Caused by Methicillin-Resistant and Methicillin-Susceptible Strains

(Background) Bacteremia due to Staphylococcus aureus has been associated with mortality rates of 15-60%. Central venous catheter (CVC) infection is a major cause of healthcare associated MRSA bacteremia. We investigated the differences in clinical features and mortality rates for patients who have methicillin-resistant S. aureus (MRSA) bacteremia compared with methicillin-susceptible S. aureus (MSSA) bacteremia secondary to CVC infection.

(Methods) We retrospectively investigated all the patients who showed positive for MRSA or MSSA from peripheral blood cultures and also positive from semiquantitative cultures of CVC tip taken on the same or near date from Aug 2004 to Mar 2016 at St Luke's International Hospital. We included the patients who were aged over 15, with sufficient medical records and didn't have other primary infections. We analyzed the consecutive 36 S.aureus bacteremia due to CVC infection. We compared the characteristics, therapy, complications and 60 day mortality rate of the MRSA and MSSA. Mann-Whitney U-test, chi-square test, Fisher test were used for analysis.

(Results) There were 17 MRSA patients (47%) and 19 MSSA patients (53%). Median age 72 (SD27) in MRSA patients, 55 (33) in MSSA patients, P<0.01. Underlying diseases of the MRSA patients vs the MSSA patients: MRSA carrier 10 (59%) vs 3 (16%), P=0.01. Diabetes 3 (18%) vs 5 (26%), P=0.70. Malignancy 2 (12%) vs 5 (26%), P=0.41. Renal diseases 4 (24%) vs 7 (37%), P=0.48. Steroid use 8 (48%) vs 4 (22%), P=0.16. TPN 10 (60%) vs 4 (22%), P=0.16. Complications of the MRSA patients vs the MSSA patients: Septic shock 8 (48%) vs 3 (16%), P=0.07. Endocarditis 0 (0%) vs 2 (11%), P=0.49. Duration of catheter placement: MRSA patients 13.5 days (8) vs MSSA patients 9.5 days (20), P=0.58. Time lag from onset to CVC removal: MRSA patients <1 day vs MSSA patients 1.0 day, P=0.71. Time lag from onset to start effective antibiotics (In all MRSA patients, vancomycin was started.): MRSA patients <1 day vs MSSA patients <1 day, P=0.7. 60 day mortality rate: MRSA patients 6/17 (35%) vs MSSA patients 1/19 (5.3%), P=0.04.

(Conclusions) Patients with MRSA carrier and old age might have higher risk of MRSA CVC infection. MRSA patients might have higher risk of septic shock (48%) and showed significantly higher 60 day mortality rate (35%) compared with MSSA patients (5.3%) in spite of appropriate therapy.

(P3-52)
保存加療に奏功した重症肝損傷 IIIb の一例

(救急災害医学)
○中村 優貴、織田 順、三浪 陽介

症例は55歳男性。既往は特になし。第1病日の正午、公園で樹木の伐採中に樹木が倒れ胸部を受傷し救急要請。来院時のvitalはGCS E4V5M6、HR 85、BP 116/84、SpO2 96%（room air）、RR 25、BT 35.8 であり、造影CTにて右肝実質内に数か所のextravasationを認め、肝周囲、脾周囲、Douglas窩
A novel heterodimeric cytokine consisting of IL-23p19 promotes the differentiation into GM-CSF-producing CD4+ T cells

(大学院博士課程3年医学総合研究所免疫制御) 〇長谷川芳哲、折井直子、溝口出 善本 隆之

Interleukin (IL)-23, a member of the IL-6/IL-12 heterodimeric cytokine family, is composed of a p19 subunit and the p40 subunit in common with IL-12, IL-23 is produced by activated macrophages and dendritic cells, and plays a critical role in the expansion and maintenance of pathogenic Th17 cells. Recently, we found that the p19 is secreted from CD4+ T cells after activation by T-cell receptor (TCR) ligation. CD4+ T cell-specific p19 deficient mice showed significantly attenuated experimental autoimmune encephalomyelitis (EAE) with reduced frequency of GM-CSF+CD4+ T cells in the central nervous system. Similar reduced frequency of GM-CSF+CD4+ T cells was observed in p19 deficient naïve CD4+ T cells after activation by TCR ligation in vitro. To investigate the molecular mechanism whereby p19 increases the frequency of GM-CSF+CD4+ T cells, Western blotting following immunoprecipitation revealed that p19 can associate with another secreted molecule, tentatively called X, from activated CD4+ T cells. We then prepared purified recombinant protein of a single chain–chain fusion of p19 and X. This p19/X protein induced proliferation of cytokine dependent cell line BaF/3 expressing IL-12Rs, IL-23Rs, and IL-27Rs, and induced phosphorylation of STAT5. These results suggest that IL-23p19 can alternatively from a novel heterodimeric protein secreted from activated CD4+ T cells, and contribute to the differentiation into GM-CSF-producing CD4+ T cells in the development of EAE.
キチン化が消失し、c-SMACが低形成となった。負の選択を誘導する高親和性ペプチド刺激でもc-SMACは形成されず、TCRには活性化したシグナル分子が共在していた。

【結論・考察】選択前DP胸腺T細胞におけるTCRのインターナリゼーションは、c-Cblが責任分子でK63ポリエピキチン化を介して誘導していると考えられた。負の選択を誘導する高親和性ペプチド刺激でもc-Cbl欠損によるTCRの取り込み低下によりc-SMACは低形成となりTCRシグナルが持続していた。負の選択では一過性的強いTCRシグナルが、正の選択では弱いTCRシグナル持続していると考えられており、c-Cbl欠損によるこのTCRシグナルの持続により胸腺選択がどう変化するのか、OT-1TgCbl−/−選択前DP胸腺細胞を用いて検討中である。

P3-55
Differences in cytokine and chemokine levels among various diseases and between serum and plasma samples

(社会人大学院博士課程2年小児科・思春期科学)
○山田 舞
(小児科・思春期科学)
柏木 保代、税所 純也、加藤 幸子
赤松 信子、河島 尚志

【Introduction】The measurement of cytokines and chemokines play a large role in elucidation of the pathology of autoinflammatory and immune diseases. Although at present, cytokine and chemokine levels are measured using multiplex immunoassays, there has not been much discussion about the differences in results between plasma and serum samples. Therefore, in this study, we compared the results of cytokine and chemokine levels measured in blood serum and plasma samples.

【Subjects and Methods】The following patients (15 in total) were analyzed: 4 patients with periodic fever, 2 patients with acute encephalopathy, and patient each with aphthous stomatitis, pharyngitis and adenitis, Familial mediterranean fever, Crohn’s disease, scleroderma, Juvenile idiopathic arthritis, West syndrome, lissencephaly, norovirus infection, Positive occipital sharp transients of sleep, and food allergy. At the time of blood collection, both plasma and serum with EDTA-2Na were collected. Measurements were performed using the 27-plex Human Cytokine Assay from Biorad.

【Results】Levels of PDGF, G-CSF, IL-1β1, IL-1ra, IL-8, IL17, and MIP-1α, and MIP-1β were found to be different between serum and plasma.

【Discussion】We demonstrated that patients with periodic fever, aphthous stomatitis, pharyngitis, adenitis, and FMF have high serum and plasma levels of various chemokines and cytokines compared with patients with other diseases. These results suggest the possibility of platelet function and macrophage involvement in the pathology of PFAPA and FMF.

P3-56
Molecular imaging of the hCD19 CAR signalosomes, “CAR microclusters”

（免疫学）
○矢部瀬紀子、町山 裕亮、若松 英豊田 博子、古畑 昌枝、秦 喜久美
横須賀 忠

CAR-T cell therapy is certainly one of the recent remarkable advantages in tumor immunotherapy. Human CD19 CAR is particularly shown to possess anti-tumor effects against CD19-positive B cell lymphomas and already applicated for clinical use in the United States. In comparison with its worthwhile evaluation, little is known about the molecular mechanisms how CAR introduces the activation signaling by T cells to kill the target cells and to develop into effector/memory CAR-T cells. To address these issues, we newly established hCD19 CAR imaging system by the combination of single molecule-based total internal reflection fluorescence microscopy (TIRFM) and hCD19-expressing lipid bilayers. We’ve really defined the distinct signalosomes, we-called “microclusters”, and demonstrated that T cell activation is harmoniously regulated by microclusters constructed by not only TCRs but also immune checkpoint receptors in a spatio-temporal fashion. We this time identified “hCD19 CAR microclusters” by using that new imaging technique and
unveils the precise mechanism of T cell activation through hCD19 CAR microclusters. These results will further develop more efficient CAR-T cells and may lead to the next generation of immunotherapy.

国際交流学生報告：G-01～G-10

G-01
カンザス大学 留学報告

（医学部医学科第6学年）
〇佐野 賢俊、深浦 将太

We had studied in the university of Kansas Medical Center, department of dermatology and anesthesiology for a month.

In the dermatology department, I chose a resident or a senior doctor each day and participated in the outpatient clinic that was held every weekday. I went into the patient exam room with the resident and observed them taking the history. They presented the patient to the faculty member, and the three of us went back in the room to finalize the plan and do any procedures such as biopsy, cryotherapy and so on if necessary.

In the anesthesiology department, morning starts quite early. I had to go to the OR at 6:00am every morning. I helped the residents to prepare for the surgery. First, I checked the operation of the mechanical ventilator. After that I prepared the medicines we used for the inductions of the anesthesia. When we finished setting up the OR, we went to the ICU and we met with the patients. We took the patients to the OR and we did general anesthesia. My most important job in the OR was intubation. I think I have done intubation about 20 times.

We really learned a lot from this rotation. Not only about medicine but also how the doctor’s life will be in the United States. This was our first time challenging oversea program. To be honest, it was tough to get used to the foreign environment, doctor’s medical conversation, and hospital system. However, we felt really comfortable working in the KUMC. Each time when we encountered difficulties, other international students, local students, and doctors helped us. We thought working in the United States is much more suitable for us than in Japan.

We think this experience was eye opening for our carrier.

G-02
ユトレヒト大学 留学報告

（医学部医学科第6学年）
〇阿部 惟

There are three main purposes of my exchange program. Developing practical knowledge about anesthesiology, improving English speaking skill, and finding solution to improve working circumstances of doctors in Japan.

Through the clinical clerkship at UMC Utrecht anesthesiology, I performed mask ventilation, laryngeal mask, endotracheal intubation, and IV line. I also have observed many anesthesiology, such as supraclavicular block, epidural and spinal anesthesia, pulsed radio-frequency, and nerve root and sympathetic block. I could participate in many surgeries. I could develop not only anesthetic but also all medical knowledge.

People in the Netherlands are very good at speaking English. They can discuss complex medical problems in English during the conference. Such circumstances improved my English skill.

In Japan, long working hours and its negative effect on health and well-being is a social problem. Especially the working environment of doctors is so severe that it is difficult for women doctor to continue working and childrearing at the same time. Through discussing about this problem with doctors in UMC, I could get some ideas which may solve it. First, nurses in the Netherlands are highly specialized and allowed to do wider range of practice than Japan. Anesthetic nurses
can manage anesthesia during the surgery and help and sometimes supervise young doctors. It reduces the burden of doctors. Second, doctors can choose working styles much freely than Japan. Not only women but also men doctors can choose to work 3 or 4 days per week. Because of this moderate working circumstance, women doctors don’t need to quit their job after having children. There is enough social support, such as kindergarten and babysit. Supporting doctors to choose how much they work would lead to stop women doctors to leave from work after having children and keep the number of doctors. Enough support for child-rearing such as enhancing the use of babysit may change to better working circumstances both men and women doctors. The number of doctors is insufficient in Japan comparing to the Netherlands and Japan is super-aging society. Why don’t we cope with such situation not by working so hard to be exhausted but by utilizing effectively human resource now we have.

G-03
台北医学大学 留学報告

（医学部医学科第6学年）
○長尾 佳奈, 山本 諒

We had our clinical clerkship in Taipei Medical University Hospital in April 2019 and rotated some departments. The practice in family medicine was the most impressive of them.

One day, with doctors and other students, I took a visit to a rural clinic and a sanatorium on a mountain which took us one hour from Taipei city by train. The doctor told me that the visit medical treatment has been developed these past few years. In our visit to the clinic, we met old people who were not be able to descend the mountain because of some disorder such as sarcopenia. The examination images taken in patient’s home were sent to the hospital in Taipei, where doctors in the radiology department take a look at them. And all information of patients was sent to the hospital in Taipei before the patients arrive there. It was designed so that patients could receive treatment smoothly.

Furthermore, we went to a facility which was called as “Stone soup” in Taipei. This facility is intended for the elderly to be supported in their home or neighborhood. Taiwan is also aging like Japan. Under such circumstances, some hospitals have been working on providing meals to elderly people and delivering meals from hospitals. The diet menu was planned by a dietitian and prepared by a cook, and provided by hospital workers and volunteers. In this way, I felt that the system that people of various occupations could support the elderly was wonderful.

Japan and Taiwan have some common social problems such as aging society. In this practice I learned the way Taiwan people support the elderly. These efforts might give us some hints to solve them.

G-04
ホーチミン市医科薬科大学 留学報告

（医学部医学科第6学年）
○夏目隆太郎

I trained at Ho Chi Minh Medicine and Pharmacy University. I saw patients with Tetanus (including adults and infants), Malaria, Dengue Fever, Three major complications of HIV in Vietnam (Tuberculosis, Cryptococcal meningitis, Talaromyces marneffei) and Toxoplasma encephalitis, Tuberculous meningitis, Rickettsia, Measles, Chickenpox and so on. I learned a difference of medical care system and that of thinking about diseases between Vietnam and Japan. For example, they thought that when saw a patient with Tuberculosis they didn’t need to put on a N95 mask because almost people had Tuberculosis in their body. There were a large number of patients who stopped taking medications or going to their own hospitals due to lack of disease education in Vietnam.

I went there alone and worried about that. But because there were some medical students from Chicago (4 people), California (3 people) and Italy (1 person) I trained together. The training was basically conducted in English, but in the case of complicated contents or in the case of a doctor who couldn’t speak English at all, a trainee born in Vietnam interpreted for the others. First time, Their English was so fast that I cannot keep up with
the conversation. But I spent almost all day with them from morning to night and got used to their speaking speed. Also I made local Vietnamese friends and set chairs on the street together and enjoyed drinking and sometimes attended their home-party. I had a lunch with Dr. Shirai who had worked in HCM city to talk about the demand for Japanese doctors in Vietnam and neighboring countries. And I also participated in the local Japanese representatives society to hear interesting stories about estate situations and economic and infrastructure situations in Vietnam.

Four weeks passed really quickly for me, but it was a dense time to be a lifetime memory. I’ve traveled to various countries by travel, but this was the first time I had stayed the same city for a while. I met various people and knew that the world I was looking at was really small. Japan’s population is 120 million and will be decreasing in a super aging society. The world I was looking at will be even smaller. I felt feared that Japan including me would be left behind. In order to expand the world, at least English is required as a communication tool.

G-05
マインツ大学 留学報告

（医学部医学科第6学年）
○水谷 久紀、須原 悠史

We went to Mainz University to study anesthesia. Mainz is in the west part of Germany and capital of Land Rheinland-Pfalz. Mainz is known as the birthplace of Johannes Gutenberg who is inventor of letterpress printing. St. Stephen Church and Mainz Cathedral are famous Buildings in Mainz.

Official name of Mainz University is “Johannes Gutenberg-Universität Mainz” named after the inventor Johannes Gutenberg. Campus of this university is very big and has many buildings. There are 35 operation rooms and about 130 anesthesiologists work there. 100 operations are performed per day.

I would like to describe things we were surprised about in Mainz University below.

First, Anesthesiologists of Mainz University have their own specialized field. Each department has its own building and operation room. Anesthesiologists have their own subspecialties and nurses are also sub-specialized. Anesthesiologists and nurses work as a team.

Second, there are induction room. Anesthesiologists can start to induct anesthesia before operating room gets ready. They can concentrate on their works without paying attention to surgeons. Patients can also be relaxed without seeing surgical instruments.

Third, medical student can already do basic medical activity. For example, they can do mask ventilation, tracheal intubation, and can insert gastric tube and take venous line. They can also operate anesthesia equipment and take anesthetic record. In Germany, practical training is thought to be more important than medical knowledge. This is reflected to the national exam for medical practitioners and it contains oral examination. Medical student in Germany start clinical clerkship earlier than in Japan and they are allowed to do medical activity to real patient.

In conclusion, surgery is performed smoothly and efficiently because anesthesiologists and nurses are specialized and they use induction rooms. In terms of education, medical students in Germany can learn practical skills.

G-06
ペーチ大学 留学報告

（医学部医学科第6学年）
○中沢 紘右、岡田このみ

We attended to Pécs University for a month as exchange students. First two weeks we rotated Urology department and next two weeks we rotated Anesthesiology department. We were able to experience a lot of wonderful learning that cannot be done in Japan by practice in Hungary, and we could also know various perspectives on medical care by interacting with medical students as well as overseas doctors.

At Urology department, we attended the English urology classes and observed out patients and operations such as TURB, TURP and Renal cell carcinoma. We
could even scrub in the operation as a second assistant holding a camera. Almost all the surgery were for the first time for us to see, so they were so interesting. In Tokyo Medical University, Davinci, endoscopic surgery machine, is commonly used in prostate cancer surgery. But in Hungary, they have endoscopic surgery and open surgery under multiple doctors due to medical advances and insurance systems.

At Anesthesiology department, we observed operations. We performed airway maintenance with the laryngeal mask and we were shown how to read the numbers of vital sign and adjust the medicine. In Japan, laryngeal masks have not been used for surgery in general, so it was a very valuable experience for us.

Through this program, we could find out a lot of good points different from Japanese medical care and systems. By accepting the differences I felt this time and reflecting them in Japanese medical care, I wanted to be a doctor with various perspectives.

G-07
モンペリエ大学 留学報告

（医学部医学科第6学年）
○二階堂靖訓

I went to Montpellier University to study about Anesthesiology. Montpellier city is 8th largest city in France. About 300,000 people are living in this city. This city is near the Mediterranean so it is warming all year around.

I met Professor Capdevila first, he told me about Montpellier University hospital. Montpellier University consists of 5 hospitals. Each hospital has different departments. I practiced at Lapeyronie hospital. These hospitals have a total of 2,000 beds and 60,000 operations every year.

After that I started the clinical clerkship program. In this hospital, the patients get nerve blocks before take surgery. Doctors used the echo to show patients nerves. Doctors taught me that they were usually careful not to touch the artery with the needle, and they checked using the echo whether they injected the anesthetic into patients’ nerve correctly.

Another 2 weeks, I studied in the ICU. The ICU has 20 beds. Almost all patients who got hospitalized in ICU were injured in a traffic accident. In France, there are many motorcycle accidents and paraglider accidents in summer. In winter, many car accidents happen. Many cities in France are built in 19th century, so the roads are very narrow and difficult to look. So, many car accidents are happening every year.

The doctors usually use paper medical records not to use electronic. Because they can see all information about patients at once to use paper medical records, and they don’t have laptop, so they can’t see electronic medical record beside the bed.

I saw that patients were recovering and removed the ventilator. When I took part in the clinical clerkship program in Japan, I couldn’t see the patients for a long time. So it was very good experience for me.

It makes me grow very much to study abroad. We can’t see the medical care what I saw in France. If you have a chance and courage, you have to go to another country to study.

G-08
ウディーネ大学 留学報告

（医学部医学科第6学年）
○太田　行紀、小宮山教史

We conducted a one-month training in pediatrics at Santa Maria della Misericordia Hospital, which is affiliated with Udine University in Italy. We participated in the outpatient clinic of Allergy and Neurology for one week, Emergency department for one week, and ward training for two weeks.

The goals of our clerkship were, 1) Learn medicine in English (Italian), improve language skills, 2) Learn the nature of medical care in Italy, 3) Learn the Italian culture and communicate actively with local residents, 4) Participate in the team medical care as much as possible, 5) Broaden our perspective. The medical school system in Italy was the same six-year system as Japan. The major difference of medicine between Italy and Japan was the number of doctors and the time spent on one patient. In a large private office, average of three or
four physicians spend 45 minutes on average for one patient. In the ward, there were about 3 patients per doctor, and they exchanged information by holding conferences with other occupations every day. Most of the rooms were private rooms and each room had a sofa bed so that parents could stay next to them. Most of the information in the hospital were written only in Italian, and it was difficult for foreigners who do not understand Italian to understand.

We experienced various cases such as asthma, various food allergies, food-dependent exercise-induced anaphylaxis, floppy infant, posterior fossa syndrome seen after removal of brain tumor, respiratory distress syndrome (RDS).

G-09  ロイアルビクトリアン アイ アンド イヤー ホスピタル 留学報告
(医学部医学科第 6 学年)
○北川 幹高

In this April, I studied otolaryngology at the Royal Victorian Eye and Ear Hospital, RVEEH, in Melbourne. It was established in 1863, specialized in ophthalmology and otolaryngology.

There are 30 inpatient beds as the largest public provider of ophthalmology and ENT services in Victoria. They deliver more than half of Victoria’s public eye surgery and all of Victoria’s public cochlear implants. They see over 220,000 patients a year. I observed ER, Balance Clinic, Outpatients Clinic, Head & Neck Clinic, Pediatric Clinic and so on. What I always felt in my studies abroad was, of course, that everything is verbal communication. It is also necessary to know as many English medical terms as possible, but as much as possible, go in people and talk in many conversations, go into the background and talks of people in the field, and get involved is very important. This is not limited to English, but it is no exaggeration to say that everything is limited to communication skills. It is important to use all opportunities to improve your ability to express what you want to convey and to understand what the other person is saying using English as a vehicle. Thanks to all the people who cooperate with and help me, I could have many invaluable experiences in Melbourne.

G-10  センメルワイ大学 留学報告
(医学部医学科第 6 学年)
○東野 有佐、小野澤美波

We participated in the clinical clerkship program at Semmelweis University in Budapest, Hungary. Semmelweis University has medical courses in three languages (Hungarian, German and English) and many students come from foreign countries. Usually we studied together with the students in English course who were from various countries.

We studied at the pediatrics department and learned three specialties which were Infancy, Cardiology and Pulmonology. We participated in their morning rounds or observed outpatients. And we had opportunities to learn and try physical examinations. Unfortunately, we couldn’t take any patient history because the patients couldn’t speak English. However, the doctors explained us about the patients and their symptoms. They also gave us some lectures on important diseases including cystic fibrosis which is the most common congenital disease in Europe but very rare in Japan.

Through this clerkship, we found some differences between Hungary and Japan. For example, ambulances, transplantation system, doctors’ workstyle and so on. We also discussed on the pros and cons of Hungarian ones and Japanese ones with the students of Semmelweis University. That discussion gave us wider and more multilateral point of views. It will help us when we think of current social and medical issues.

In addition to that, the students’ lifestyle is quite different. The students manage their schedule and study independently. Their exams emphasize physical skills and oral examinations, and they require many practical medical knowledges same as residents. It stimulated our way of thinking about study.

We appreciate for having this valuable experience and hope the relationship between Semmelweis University and Tokyo Medical University will keep steady in the future.