Toho Journal of Medicine Vol. 4 No. 4 掲載論文の紹介

Efficacy and Future Prospects for Intraoperative Glycemic Management Using a New Artificial Pancreas with a Closed-Loop Blood Glucose Monitoring System
Kitamura T
Toho J Med 4（4）: 107—115, 2018

要約：

Glucose metabolism is modified throughout the perioperative period, resulting in hyperglycemia. Many factors affect glucose metabolism in patients undergoing surgery, and the underlying mechanisms are complicated. Due to the lack of complete elucidation of mechanisms underlying perioperative changes in glucose metabolism, the guidelines for perioperative glycemic management have not been established. Nevertheless, adequate glycemic management is absolutely required, because perioperative hyperglycemia is considered an independent risk factor of mortality and morbidity associated with surgery. In critically ill patients, hypoglycemia as well as hyperglycemia are considered risk factors for death. It was also reported that variability of blood glucose levels is an independent predictor of mortality in critically ill patients. Today, a new artificial pancreas with a closed-loop blood glucose monitoring system is available in clinical settings. Recent clinical studies suggested that safe and stable glycemic management for patients undergoing major surgery can be achieved with perioperative application of the artificial pancreas. We assume that future clinical investigations using the artificial pancreas will contribute to further elucidation of perioperative glucose metabolism and the establishment of guidelines for perioperative glycemic management. This article reviews recent studies focusing on perioperative management of glucose metabolism and discusses the efficacy and future prospects of intraoperative glycemic control using the artificial pancreas.

KEYWORDS: artificial pancreas, glucose metabolism, insulin, stress-induced hyperglycemia, surgical prognosis

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Parathyroidectomy for Tertiary Hyperparathyroidism: A Single-Center Experience
Saito F, Sumazaki M, Osaku T, Ogata H
Toho J Med 4（4）: 116—122, 2018

要約：

Introduction: Tertiary hyperparathyroidism (THPT) refers to the development of hypercalcemia and hyperparathyroidism following a prolonged period of secondary hyperparathyroidism. THPT is most commonly observed in patients after successful kidney transplantation (KTx). The treatment guidelines for post-KTx THPT are still unclear; thus, this study aimed to examine patients who underwent parathyroidectomy (PTx) for THPT and to assess the effects of PTx on long-term graft function.

Methods: We performed a retrospective study of patients who underwent PTx for THPT between 2009 and 2017 at our institution. Levels of serum calcium (Ca) and intact-parathyroid hormone (i-PTH) were measured before and after PTx (one day, one month, three months, six months, one year, and three years) to evaluate the effects of PTx. Estimated glomerular filtration rate (eGFR) was measured to investigate the effect on graft function after PTx.

Results: Seven males and six females were included in this study. The post-PTx levels of serum Ca and i-PTH significantly decreased at one day compared with the pre-PTx levels ($p < .001$). The mean eGFR level decreased at three and six months after PTx. However, at one year post-PTx, the eGFR level had improved to the pre-PTx level. There was no recurrence or loss of graft function during a 58-month follow-up period.

Conclusions: After PTx, the levels of serum Ca and i-PTH significantly improved. The level of eGFR tended to decrease within the first year. We recommend that clinicians follow-up closely with PTx patients during the first year post-PTx due to unstable renal function.

KEYWORDS: tertiary hyperparathyroidism, parathyroidectomy

Correlation between Peripapillary Atrophy and Optic Nerve Head Blood Flow in Eyes with Untreated Normal-Tension Glaucoma

Ito H, Takumi T, Enomoto N, Anraku A, Ishida K, Tomita G

Toho J Med 4（4）: 123—131, 2018

要約：

Introduction: To evaluate relationships between the area and extent of peripapillary atrophy (PPA) and optic nerve head (ONH) blood flow and between PPA parameters and structural and functional damage in eyes with untreated normal-tension glaucoma (NTG).

Methods: Thirty-six eyes (36 subjects) with newly diagnosed, untreated NTG were included. Correlations between PPA and ONH blood flow were examined. The PPA was examined using confocal scanning laser ophthalmoscopy, ONH was examined using laser speckle flowgraphy, and circumpapillary retinal nerve fiber layer thickness was measured using spectral-domain optical coherence tomography. Retinal function was examined using standard automated perimetry mean deviation (MD).

Results: The PPA area was significantly correlated with the refractive spherical equivalent ($r = -0.418$, $P = 0.010$), mean blur rate (MBR) inside the ONH (MBR_A; $r = -0.394$, $P = 0.016$), and MBR of ONH tissue (MBR_T; $r = -0.328$, $P = 0.048$). Total angular extent around the ONH of PPA was significantly correlated with MD ($r = -0.344$, $P = 0.037$), MBR_A ($r = -0.360$, $P = 0.029$), and MBR_T ($r = -0.368$, $P = 0.025$). Multiple regression analyses revealed that PPA area significantly contributed to changes in MBR_A. Total angular extent of PPA significantly contributed to changes in MBR_T.

Conclusions: Significant relationships between PPA and ONH blood flow parameters were identified in eyes with untreated NTG.

KEYWORDS: glaucoma, peripapillary atrophy, laser speckle flowgraphy

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Metabolic Tumor Volume and Total Lesion Glycolysis in PET/CT are Related with the Clinicopathological T Stage of Colorectal Cancer and Predict its Prognosis

Kido H, Mizumura S, Funahashi K, Shibuya K, Urita Y, Terahara A

Toho J Med 4（4）: 132—140, 2018

要約：

Introduction: Positron emission tomography (PET)/computed tomography (CT) plays an important role in cancer diagnosis. Recently, novel metabolic parameters obtained on PET/CT, such as metabolic tumor volume (MV) and total lesion glycolysis (TLG), have been reported to be diagnostic and prognostic biomarkers of various cancers. We evaluated the potential of these glucose metabolic parameters for the prognostic diagnosis of colorectal cancer (CRC), comparing them with conventional parameters such as the maximum standardized uptake value (SUV max) and maximum average SUV within a 1-cm^3 spherical volume (SUV peak).

Methods: This study included 82 patients who underwent surgical resection of CRC without distal metastasis between April 2015 and December 2017. They underwent [^{18}F]-fluorodeoxyglucose-PET/CT and measurement of MV, TLG, SUV max, SUV mean, and SUV peak. After classifying the patients into four groups by pathological T stage, the metabolic parameters of each group were compared between the left- and right-sided large intestine using nonparametric multiple comparison test, and their prognosis was analyzed using Cox proportional hazards regression analysis.

Results: The TLG value had a significant relation with the pathological T stage of the left-sided large intestine. Multivariate analysis of the clinicopathologic parameters (TLG, location, histological type, and T stage), revealed only the TLG of the primary tumor as an independent prognostic factor for recurrence within a year after surgery without distant

metastasis.

Conclusions: Our study results may suggest that TLG in PET/CT reflects a pathological T stage and plays a role in the prognosis of patients with local CRC.

KEYWORDS: FDG-PET/CT, colorectal cancer, metabolic parameter

Unusual Massive Endometrial Hyperplasia: Initial Presentation with a Small Ovarian Granulosa Cell Tumor
Takeya C, Komiyama S, Kugimiya T, Takahashi R, Kubushiro K, Takahashi K
Toho J Med 4（4）: 141—145, 2018

要約：

Ovarian granulosa cell tumors (OGCTs) vary greatly in size, with an average diameter of approximately 10 cm. OGCTs often cause diverse estrogen-related symptoms and are sometimes accompanied by complications related to endometrial pathology. Nevertheless, endometrial hyperplasia with an OGCT does not generally present with tumor-like masses in the uterine cavity. We encountered a unique case: A 77-year-old woman presented a small OGCT complicated by massive endometrial hyperplasia that resembled a malignant uterine tumor. Initially, we diagnosed the mass as a malignant uterine tumor with ovarian metastasis. However, the final diagnosis was OGCT and endometrial hyperplasia. Sex cord stromal tumors of the ovary should be considered if a malignant uterine tumor is the most likely suspected cause of tumor-like endometrial pathology and if the presentation involves even a small ovarian tumor.

KEYWORDS: deep venous thrombosis, endometrial hyperplasia, estradiol, granulosa cell tumor

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Drug-Induced Fanconi Syndrome in a Patient with Breast Cancer: A Case Report
Saito F, Osaku T, Sato G, Sumazaki M, Sasaki Y, Kijima S, Urita Y, Ogata H
Toho J Med 4（4）: 146—151, 2018

要約：

Fanconi syndrome (FS) is a rare disease characterized by a dysfunction of the proximal renal tubules. Drug-induced FS may be neglected or misdiagnosed, and most reported cases have occurred due to alkylating agents and platinum compounds. We encountered drug-induced FS in a patient with breast cancer using zoledronate. A 58-year-old woman underwent mastectomy for breast cancer at age 54. Two years later, bone metastases were detected and treated using a combination therapy of anastrozole and zoledronate. After 17 months, everolimus, exemestane, and zoledronate were prescribed. Then, she experienced hypocalcemia and proximal renal tubular dysfunction. FS induced by zoledronate was diagnosed, and zoledronate was immediately discontinued. This resulted in immediate and sustained improvement in renal function. In the past, three cases of zoledronate-induced FS were reported. All patients were prescribed zoledronate in combination with molecularly targeted drugs. Close monitoring of proximal tubular function is recommended for such patients.

KEYWORDS: fanconi syndrome, zoledronate, breast cancer
