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作成者（著者）	東邦大学医学会編集委員会
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## Toho Journal of Medicine Vol. 5 No. 4 掲載論文の紹介

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Assessment of Fetal Cardiac Function and Development of a Novel Technique

Nakata M

Toho J Med 5 (4): 129—134, 2019

**要約 :**

Fetal circulatory physiology differs from that of the neonate. A concept of biventricular combined cardiac outputs is necessary to understand and assess the fetal cardiac function. Fetal cardiac function has been estimated using echocardiographic methods such as M-mode, B-mode, color flow mapping, and pulsed wave Doppler. In addition, recent studies have reported the utility of tissue Doppler imaging in fetal echocardiography. However, established parameters for fetal cardiac function remain to be unresolved. Table 1 shows variables which have been reported in the literature and used in clinical studies in these days. Therefore, we developed two novel techniques to assess fetal cardiac function; one is automatic fractional shortening method, the other is E/e' by dual gate Doppler methods. These two techniques are expected to be reliable and useful methods to assess fetal pathological status in various conditions.

**KEYWORDS:** fetal cardiac function, dual gate doppler, E/e', AutoFS

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Development and Modification of Active Learning Based on Qualitative Educational Research

Hiroi N

Toho J Med 5 (4): 135—141, 2019

**要約 :**

Today, as a result of university education, “What have students acquired?” is asked, rather than “What have they been taught?” In the Toho University Faculty of Medicine, problem-based learning tutorial has been introduced and implemented since 2006 as an active learning program. The speed of change in education is extremely fast, and if the changes in our education cannot cope, it will be left behind. At the Medical Education Center, we are continuously developing and examining methods of learning and teaching for curriculum modification and introduce the efforts. Active learning is not difficult at all, and there are many easy ways to do it. We think that it is important to carry out the development and practice of educational techniques while making use of faculty development for lectures and workshops etc. In this article, we describe how future medical education should be conducted, focusing on efforts made at the Center for Medical Education.

**KEYWORDS:** medical education, active learning, problem-based learning

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Prognostic Impact of Plasma Fibrinogen Changing in Patients with Resectable Pancreatic Cancer

Okada R, Otsuka Y, Tsuchiya M, Ito Y, Matsumoto Y, Maeda T, Ishii J, Kubota Y, Funahashi K, Shimada H

Toho J Med 5 (4): 142—152, 2019

**要約 :**

**Introduction:** Previous studies have indicated that hyperfibrinogenemia is a predictor of poor prognosis in various tumors. However, little information is available on the prognostic impact of preoperative hyperfibrinogenemia and its changing pattern in resectable pancreatic ductal adenocarcinoma (PDAC) patients.

**Methods:** This retrospective study examined 102 PDAC patients who underwent curative surgery at Omori Medical Center, Toho University School of Medicine (Tokyo, Japan) between 2004 and 2016. Among these, 44 (43.1%) reported preoperative hyperfibrinogenemia.

**Results:** Preoperative hyperfibrinogenemia was associated with an independent prognostic factor for patient survival. The cumulative 5-year overall survival time rate in the normal fibrinogen and hyperfibrinogen groups was 44.8% and 31.2%, respectively, with a significant difference between the two groups ( $P = 0.047$ ). The prognostic factors in PDAC patients revealed preoperative hyperfibrinogenemia of  $\geq 400$  mg/dL ( $P = 0.017$ ). The cumulative 5-year overall survival rates were 57.3% and 9.1% in the normalization and nonnormalization groups, respectively, with a significant difference between the two groups ( $P = 0.008$ ). In multivariate analysis, the prognostic factors in patients with preoperative hyperfibrinogenemia revealed a postoperative fibrinogen level of  $\geq 400$  mg/dL ( $P = 0.001$ ).

**Conclusions:** Preoperative hyperfibrinogenemia was the risk factor for reducing overall survival in PDAC patients. Among the patients with hyperfibrinogenemia, the non-normalization group after surgery revealed to be a high-risk group for poor prognosis.

**KEYWORDS:** hyperfibrinogenemia, pancreatic cancer, prognosis

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### High and/or Non-Decreased Systemic Inflammatory Index During Treatment Indicates Poor Prognosis in Patients with Esophageal Cancer

Murayama K, Suzuki T, Oshima Y, Yajima S, Funahashi K, Shimada H  
Toho J Med 5 (4): 153–160, 2019

要約 :

**Introduction:** The initial high systemic inflammatory index (SII), which is calculated as platelets  $\times$  (neutrophils / lymphocytes), indicates a poor prognosis in patients with various malignant tumors, but its value after treatment in esophageal cancer is not well described.

**Methods:** The prognostic value of the perioperative SII was evaluated in 103 esophageal cancer patients treated by radical esophagectomy. Fifty-nine of the patients received neoadjuvant chemotherapy (NAC); 44 received surgery only. The prognostic value of the SII was evaluated at each stage of the treatment. The impact of clinicopathological factors on the SII and prognosis was also evaluated after stratifying patients by treatment with surgery and NAC or surgery only.

**Results:** Pre-treatment SII was not associated with prognosis, but pre-operative SII ( $p = 0.11$ ), postoperative SII ( $p = 0.07$ ), and post-NAC SII ( $p < 0.05$ ) were associated with prognosis. A decrease in the SII during treatment was also associated with a good prognosis. A high SII before NAC was significantly associated with a decrease of SII during treatment ( $p < 0.05$ ).

**Conclusions:** A high or non-decreased SII after treatment of esophageal cancer was a poor prognostic indicator. The prognosis of patients with high SSIs might be improved by NAC.

**KEYWORDS:** neoadjuvant therapy, esophageal cancer, inflammatory index

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### Changes in Bruch's Membrane Opening-Minimum Rim Width after Reduction of Intraocular Pressure in Eyes with Open-Angle Glaucoma

Takumi T, Enomoto N, Ishida K, Tomita G  
Toho J Med 5 (4): 161–172, 2019

要約 :

**Introduction:** Bruch's membrane opening-minimum rim width (BMO-MRW) is measured perpendicular to the neural tissue axis and considers the variable trajectory of axons over the point of measurement, similar to the measurement strategies used for circumpapillary retinal nerve fiber layer thickness (c-RNFLT). However, changes in BMO-MRW in relation to those in c-RNFLT with intraocular pressure (IOP) reduction remain unclear. This study evaluated changes in BMO-MRW and their relationship to changes in the optic nerve head cup size and c-RNFLT in patients with open-

angle glaucoma post-trabeculectomy (TLE).

**Methods:** Thirty-one eyes of 31 patients were enrolled. All patients underwent fundus imaging with spectral domain-optical coherence tomography before and three months after TLE. We measured BMO-MRW and c-RNFLT and evaluated the cup size by calculating the cup profile area using the ImageJ program.

**Results:** Reduction of IOP led to a significant increase in BMO-MRW and a significant decrease in cup size. Changes in the BMO-MRW of the whole disc and the temporal superior segments correlated significantly with the change in IOP. In multiple regression analysis, there was a significant relationship between the changes in cup size and axial length (but not the change in IOP) and the change in BMO-MRW. Although c-RNFLT did not increase significantly post-TLE, the mean deviation of the visual field at baseline, cup size at baseline, and change in cup size were considered to contribute to the change in c-RNFLT.

**Conclusions:** BMO-MRW increased after adequate TLE-induced reduction of IOP. The increase in BMO-MRW was related to the cup size and reduction in axial length.

**KEYWORDS:** glaucoma, spectral-domain optical coherence tomography, Bruch's membrane opening

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Assessment of Postoperative Renal Dysfunction Requiring Prolonged Renal Replacement Therapy and the Associated Mortality Rate

Kogawa R, Ochiai R

Toho J Med 5 (4): 173—178, 2019

要約 :

**Introduction:** Postoperative renal dysfunction requiring renal replacement therapy (RRT) is associated with a poor postoperative outcome. The aim of this study was to evaluate perioperative renal function among patients who required postoperative RRT.

**Methods:** This was a retrospective cohort study of Japanese patients who required RRT within 6 months of surgery at our institution over the previous 10-year period of observation. Following data were extracted from electronic patient records for analysis: preoperative renal function, incidence of RRT, recovery rate from RRT, and mortality rate at 6 months after surgery. Univariate and multivariate logistic regression analyses were conducted to determine the odds ratio (OR) for postoperative RRT dependence.

**Results:** Among 48677 patients who underwent surgery, 769 required RRT postoperatively. Of these latter patients, 159 did not receive RRT preoperatively. Therefore, the inductive rate of new RRT was 0.33% (159 of 48067 patients). The mortality rate was 42.1% (67 of 159) in patients who required new RRT. In patients who received new RRT without preoperative renal dysfunction, the recovery rate from RRT was 100% compared with 80.4% in patients with preoperative renal dysfunction. In multivariate analysis, the preoperative estimated glomerular filtration rate [adjusted OR = 0.76 (0.63-0.92),  $p = 0.005$ ] was a significant risk factor for postoperative RRT dependence. The mortality rate related to multiple organ failure and sepsis in patients requiring postoperative RRT was 83.8%-90%.

**Conclusions:** Preoperative renal function is the most important factor influencing postoperative renal outcome.

**KEYWORDS:** perioperative renal function, renal replacement therapy, mortality rate

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