

## Toho Journal of Medicine Vol.2 No.1 掲載論文の紹介

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Progress in Insulin Therapy: The Impact of Basal Insulin

Hirose T

Toho J Med 2 (1): 1—7, 2016

要約：

This report summarizes progress in insulin products, in particular basal insulin. Prolonged, stable pharmacokinetic and pharmacodynamic profiles are very important for basal insulin, and several analog insulins for basal supplementation have been developed in the last 10 years, which has resulted in safer and more efficient glycemic control.

**KEYWORDS: diabetes, basal insulin, bolus insulin, analog insulin, hypoglycemia**

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A Mathematical Model of the Pathophysiology of Reflux Esophagitis

Tanaka H, Urita Y, Kawagoe N, Sasaki Y, Watanabe T, Kawaguchi T

Toho J Med 2 (1): 8—15, 2016

要約：

**Background:** We used a 1-dimensional cellular automaton (CA) model to investigate reflux esophagitis (RE), which is caused by increased gastroesophageal reflux. The reflux route is usually 1-way, from the stomach to the esophagus, and reflux content advances upward over time, which suggests that the next state is decided by the prior state of interaction between gastric acid and the esophageal epithelium. The present study evaluated whether a 1-dimensional CA model accurately simulated endoscopic findings from RE.

**Methods:** Using Microsoft Excel 2013, we programmed a 1-dimensional CA with 3 neighbors and 2 states: 0 or 1. The initial state was defined as the gastroesophageal junction, and reflux of gastric acid moved in accordance with CA calculations. Because the CA rules determined how the states of given cells changed, the rules yielded other cell states. We attempted to identify CA rules that, after repeated calculations, yielded shapes consistent with endoscopic findings of RE.

**Results:** Images from 1-dimensional CA resembled endoscopic findings of RE. Overall, 23 (9.0%) of 256 CA rules generated progressive growth patterns. This frequency approximates the reported prevalence of RE. Rule 232 was most likely to simulate the various patterns of mucosal breaks identified by endoscopy.

**Conclusions:** Endoscopic findings were readily simulated by a simple mathematical method, a 1-dimensional CA. A simple local rule between adjacent cells might predict endoscopic findings of RE.

**KEYWORDS: cellular automaton (CA), reflux esophagitis (RE), mathematical model**

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## Perioperative Antithrombotic Treatment in Proctological Surgery

(肛門疾患手術における周術期抗血栓療法の管理)

Kurihara A, Funahashi K, Kaneko H

Toho J Med 2 (1): 16—21, 2016

### 要約：

**目的：**この後ろ向き研究は肛門疾患手術における周術期抗血栓療法の管理方法を作ることを目的とした。

**方法：**2008年4月から2014年8月までに529症例（男性351症例，女性178症例）の肛門疾患の手術を施行した。529症例のうち73症例（13.8%）は術前に抗血栓療法を受けていた。このうち26症例は抗血栓療法を継続，38症例は抗血栓療法をヘパリンに置換，9症例は抗血栓療法を中止した。

**結果：**術後出血を529症例中18症例（3.4%）に認めた。術後出血の発生率は，抗血栓療法継続群で1/26（3.8%），ヘパリン置換群で14/38（36.8%），抗血栓療法中止群は0/9（0%），対照群で3/456（0.7%）であった。有意な出血のリスク因子はヘパリン置換（ $p < 0.001$ ，95%信頼区間14.557–166.588，オッズ比49.241）と手術時間（ $p = 0.050$ ，95%信頼区間1.000–1.025，オッズ比1.013）であった。

**総括：**術前の抗血栓療法中止に起因する血栓の発症する確率は非常に少ない。しかし血栓塞栓症が発症した場合には重篤な合併症となる。さらにヘパリン置換に起因する出血率が高いことを考慮すると抗血栓療法を継続することが最も適切な肛門疾患手術における周術期抗血栓療法と考える。

**索引用語：**出血，抗血栓療法，肛門疾患手術，ヘパリン，ワルファリン

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## Serum p53 Antibody is a Useful Biomarker for Long-Term Monitoring of Breast Cancer: Report of a Recurrent Case After Surgery

Kubota Y, Shimada H, Magoshi S, Saito F, Osaku T, Nemoto T, Ogata H, Kaneko H

Toho J Med 2 (1): 22—25, 2016

### 要約：

Serum p53 antibody (s-p53-Ab) is the most recently developed biomarker for breast cancer. Only a few studies have evaluated perioperative s-p53-Ab titers in patients with breast cancer. S-p53-Ab titers were monitored for over 4 years, during the perioperative period and after surgery, in a 75-year-old woman with clinical stage IIA (T2N0M0) breast cancer. The results of screening tests were negative for cancer antigen 15-3, carcinoembryonic antigen (CEA), and National Cancer Center-Stomach-439; only s-p53-Ab level (10.1 U/ml) was positive preoperatively. S-p53-Ab titer remained positive (9.1 U/ml) after radical surgery. Pathologic analysis of surgically resected specimens showed a stage IIB tumor (pT2N1M0). Two years postoperatively, CEA level had increased to 5.9 ng/ml. At this time, liver metastases were detected by computed tomography. Neither chemotherapy nor hormone therapy were effective against this recurrence, and the patient died 3 years after surgery. Perioperative s-p53-Ab titer was a useful marker for long-term monitoring of residual cancer cells in a patient with stage IIA breast cancer.

**KEYWORDS:** serum p53 antibody (s-p53-Ab), breast cancer, surgery, monitoring

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Successful Everolimus Treatment of Renal Angiomyolipoma and Lymphangioliomyomatosis: A Case Report  
Urabe N, Sakamoto S, Nakamura Y, Gocho K, Ishiwatari T, Homma S  
Toho J Med 2 (1): 26—29, 2016

**要約 :**

A 42-year-old woman with renal angiomyolipoma and lymphangioliomyomatosis associated with tuberous sclerosis complex was treated with the mammalian target of rapamycin (mTOR) inhibitor everolimus. After 6 months of treatment, the maximum size of the renal angiomyolipoma decreased from 58×41 to 37×32 mm on abdominal contrast-enhanced computed tomography (CT). Pulmonary nodules also decreased in size on chest CT. Forced expiratory volume in 1 second (FEV<sub>1</sub>) decreased from 1740 to 1680 ml, but  $\dot{V}_{50}/\dot{V}_{25}$  ratio improved from 4.38 to 3.58 on pulmonary function testing. Although stomatitis is a known major adverse effect of everolimus treatment, it was mild in severity in the present patient.

**KEYWORDS: angiomyolipoma, everolimus, lymphangioliomyomatosis, tuberous sclerosis complex**

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Axillary Artery Occlusion After Radiotherapy for Breast Cancer: A Case Report  
Okuma S, Fujii T, Katayanagi T, Masuhara H, Shiono N, Watanabe Y  
Toho J Med 2 (1): 30—32, 2016

**要約 :**

A 64-year-old woman was admitted for weakness and coldness in her right upper arm. She had undergone a right mastectomy for breast carcinoma 32 years before presentation and radiotherapy for clavicular metastasis of breast cancer 3 years before presentation. After thorough investigation, postradiotherapy axillary artery occlusion was diagnosed. She underwent right external carotid—brachial artery bypass and was discharged without postoperative cerebral complications. Herein, we describe treatment for post-radiotherapy axillary artery occlusion.

**KEYWORDS: breast cancer, radiotherapy, vascular injury, axillary artery occlusion, external carotid artery**

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