Endoscopy

Introduction

The Endoscopy Division covers three fields of interest: the gastrointestinal (GI) tract, respiratory system and head and neck. A total of 11,112 endoscopic examinations were performed in 2004, of which 9,798 were GI endoscopy, 589 bronchoscopy, and 427 laryngoscopy. Recently, a remarkable increase has been noted in the number of endoscopic treatments, such as endoscopic mucosal resection (EMR), endoscopic submucosal dissection (ESD), percutaneous endoscopic gastrostomy (PEG), endoscopic balloon dilatation, and metallic stenting and PDT. A high detection rate for esophageal carcinoma at GI endoscopy is a characteristic of our hospital, which is explained by the fact that the large number of patients with head and neck cancer who have high risks of combining esophageal cancers are examined at our division. We have operated a digital filing system for endoscopic images since 1997. The filing system makes it prompt to compare new images with older ones of the same patients. The digital images have advantages of high quality resolution and the possibility of long-term preservation using EVIS 240/260 system. In addition, we have used operating system for endoscopy called Miracle, which connect with the local area network in the National Cancer Center Hospital East. We have introduced new high vision digital imaging endoscopy system (high resolution over 100 million pixels) of LUCERA system (Olympus Optical Co. Ltd.) for routine examination since 2003.

Routine Activities

An electronic laryngoscope is routinely used in the pretreatment and postoperative evaluations of head and neck cancer patients. We also find it useful for patient education. Recent developments of instruments and techniques include metallic stenting for malignant bronchial stenosis, PEG for palliation, ultrathin cholangio-pancreatoscopy, and adaptive enhancement by image processing. An endoscopic ultrasonography (EUS) provides important information in staging and determining resectability. Therapeutic frontiers are also being explored by the use of EMR for early gastrointestinal mucosal cancers. The percentage of cases treated with EMR has been increasing, and this increase is caused by expansion of indications. New techniques (endoscopic submucosal dissection method: ESD), using an insulation-tipped diathermic knife (IT knife, B-knife) for early gastrointestinal cancer has overcome the limitation in size of the tumors. We have developed new multiangle endoscope and some special assisted devices for EMR. Furthermore we have tried to perform EMR combined with pre/post CRT for patients with esophageal carcinoma even invading the muscularis mucosa or upper submucosa and treated without esophagectomy. On colonoscopy, we use a magnifying endoscope (CF240ZI, Olympus Optical Co., Ltd. Japan) routinely since December 1993 and also use high evolutional CCD endoscope (CFH260 AZL/ I, Olympus Optical Co., Ltd. Japan). Endoscopic day surgery such as polypectomy and EMR, are now performed in one tenth of all examinations. For diagnosis of early lung cancer, lung biopsy under real-time CT fluoroscopic guidance is performed in a large number of cases, and has yielded promising results. Brachytherapy is applied to relapsed cases of lung cancer with a high response rate.

New Developments & On Going Study

Correct assessment of gastrointestinal mucosal color is extremely important in the endoscopic diagnosis of digestive tract diseases. New diagnostic method using narrow band imaging system (NBI) has been developed for the examination of the spectral characteristics of tissue in the GI tract and head region. In our study, each lesion in GI tract had its own peculiar spectral characteristics, which suggested that NBI might become a useful modality for clarifying the spectral characteristics of malignant lesions in comparison with any other benign lesions. We can detect mucosal microvessel pattern and it makes breakthrough for detecting very early pharyngeal carcinoma. On colonoscopy, NBI system may be sufficient to differentiate hyperplastic polyp from adenomatous polyp, and to visualize neoplasia with image processing in real time during colonoscopy without the need for dye spraying. Consequently we propose a term of "optical/digital chromoendoscopy" using NBI system and hope that this instrument will become standard endoscopy in the 21st century. To estimate the feasibility and efficacy of using NBI system for surveillance or screening examination, randomized control trials will start in 2005 (NBI study in head and neck, esophagus and colon).

Genetic and immunohistochemical analyses using endoscopic biopsy specimens have allowed the prediction of chemosensitivity and survival in patients with advanced esophageal and gastric cancers. In addition, we have investigated the correlation between bacterial infection and upper GI carcinogenesis. We found that mutant ALDH2-2 allele is strongly associated with multiple dysplastic or cancerous changes in the upper aerodigestive tract and that exhalation of high levels of acetaldehyde and normal oral microflora might be a regional source of this carcinogenic compound upon drinking.

Finally, the Japan Polyp Study (JPS) began in 2000, and its objective is to evaluate follow-up surveillance strategies in patients who have undergone two complete colonoscopies for the control of colorectal cancer, with the removal of all detected polyps by high-resolution chromoendoscopy, including the removal of flat or superficial depressed lesions. The JPS is scheduled to continue until the year 2010, and future data will help to develop recommendations for surveillance guidelines for such patients.

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Number of Patients Examined in 2004

Upper gastrointesinal endoscopy	6029
Endoscopic ultrasonography	250
Endoscopic mucosal resection (esophagus)	152
Endoscopic mucosal resection (stomach)	138
Endoscopic dilation	949
Percutaneous endoscopic gastrostomy	98
Photodynamic therapy (esophagus)	30
Colonoscopy	2122
Polypectomy/EMR	624
ERCP	30
Bronchoscopy	589
Photodynamic therapy (lung, bronchus)	6
Laryngoscopy	427
Narrow Band Imaging (head and neck)	280
Endoscopic mucosal resection (head and neck)	12

ERCP: Endoscopic retrograde cholangio-pancreatography