Endoscopy

Introduction

The Endoscopy Division covers three fields of interest: the gastrointestinal (GI) tract, respiratory system and head and neck. A total of 9924 endoscopic examinations were performed in 2003, of which 8876 were GI endoscopy, 620 bronchoscopy, and 428 laryngoscopy. Recently, a remarkable increase has been noted in the number of endoscopic treatments, such as endoscopic mucosal resection (EMR), percutaneous endoscopic gastrostomy (PEG), endoscopic 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 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 in this year.

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 in 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) for early gastrointestinal cancer has overcome the limitation in size of the tumors. We have developed new multi-angle 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 have used a magnifying endoscope (CF240ZI, Olympus Optical Co., Ltd. Japan) routinely since December 1993 and also have used high evolutional CCD endoscope(CFH260AZL/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 has been 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

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 and neck area. 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 could treat early head and neck cancer by only EMR. It has been clarified that adaptive enhancement by image processing is effective for the diagnosis of crypt pattern of colonic tumors, extent of cancerous invasion in early gastric cancer and ulcer staging . We also can detect the mucosal microvessel pattern and it makes breakthrough for detecting very early pharyngeal carcinoma. Image analysis of the fine mucosal network pattern by magnifying endoscopy is also being studied. These studies along with progress in electronic video endoscopy are thought to be the most promising concepts in endoscopic diagnosis. Furthermore, it is very important to develop them for making objective and quantitative diagnosis.

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.

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Number of Patients Examined in 2002-2003

	2002	2003
Upper gastrointestinal endoscopy	5633 (237)	5777(272)
Endoscopic dilation	337	462
Colonoscopy	2323(1032)	2083(604)
Endoscopic ultrasonography	202	220
ERCP and cholangioscopy	54	45
Bronchoscopy	639	620
Laryngoscopy	338	428

( ): Number of cases treated by endoscopic mucosal resection and polypectomy.
ERCP: endoscopic retrograde cholangio-pancreatography.