

NAKANISHI H: Ankyrin Gene Mutations in Japanese Patients with Hereditary Spherocytosis 73-82

To elucidate the pathogenesis of hereditary spherocytosis (HS) in the Japanese population, we studied the ankyrin-1 (ANK-1) gene of genomic DNA from Japanese patients with HS. Sixty-seven patients from 63 unrelated families were included in this study. Nineteen mutations of the ANK-1 gene pathognomonic for HS from 20 families were identified: nine frameshift mutations, four nonsense mutations, and six abnormal splicing mutations. These mutations have not been previously reported, and are thought to be specific to the Japanese population. The incidence of ANK-1 gene mutations in Japanese HS patients ranges from at the least 30% to 50% of the total HS kindred. At the protein level, ankyrin deficiency was not observed in these 20 patients with ankyrin mutations. In contrast, mild deficiency of protein 4.2 (P 4.2) was observed in 17 patients (85%) with ankyrin mutations. Therefore, it is feasible that most cases of HS with a mild deficiency of P 4.2 at the protein level, most common in Japanese HS kindred, are caused by ankyrin mutations.

FUKUSHIMA H: Expression and Localization of  $\text{Na}^+/\text{H}^+$  Exchanger (NHE) Isoforms in Nasal Mucosa 83-93

The  $\text{Na}^+/\text{H}^+$  exchanger (NHE) is an important regulator for intracellular pH, cell volume, and transepithelial  $\text{Na}^+$  transport. The NHE has a tightly coupled 1:1 stoichiometry for exchange of  $\text{Na}^+$  and  $\text{H}^+$ . The exchange reaction is driven by the transmembrane chemical gradients for  $\text{Na}^+$ . The presence of multiple forms of the exchanger has been demonstrated by the recent cloning of seven NHEs, NHE1, 2, 3, 4, 5, 6, and 7. Physiological studies have shown the NHE to be a carrier protein regulating airway surface liquid (ASL) pH and the intracellular pH in airway epithelial cells. To date, the localization of the NHE isoforms in airway is not known. The present study was undertaken to examine the expression and distribution of NHE1-4 isoforms in guinea pig and human nasal mucosa. We used the reverse transcription-polymerase chain reaction to assess the expression of NHE1-4 isoforms. Although NHE2 and 4 isoform mRNAs could not be detected in guinea pig nasal mucosa tissue, NHE1 and 3 mRNAs were predominant. We used in situ hybridization to examine their localization in guinea pig and human nasal mucosa. NHE1 isoform mRNA was distributed in nasal epithelial cells, as was NHE3 isoform mRNA, but the latter's expression was lower than that of NHE1. NHE3 isoform mRNA also distributed in the lamina propria. Although NHE1 was housekeeping, it became clear that it is especially mostly expressed into a nasal epithelial cells. These findings suggest that NHE1 and 3 regulate ASL pH and the intracellular pH in airway epithelial cells.

AKIYAMA M: Myocardial Contrast Echocardiography Employing  
Transesophageal Echocardiography 95-100

Contrast echocardiography is an echocardiographic imaging technique using contrast agents. Recently, the technical advances in contrast echocardiography have made possible quantification of myocardial perfusion abnormalities by transthoracic echocardiography. However, there has been only one report on myocardial contrast echocardiography (MCE) using transesophageal echocardiography (TEE), and no reports regarding MCE employing TEE with a second harmonic imaging technique or second generation contrast agents. In the present study, we evaluated whether it is possible to perform MCE using TEE with a second harmonic imaging technique and second contrast agents (OPTISON<sup>®</sup>) and to quantify myocardial perfusion abnormalities in vivo. We concluded that 1) MCE using TEE with such an imaging technique and such contrast agents is possible in only the left ventricular inferior wall near a transducer, and 2) coronary flow reserve can be assessed by this method in the left ventricular inferior wall.

KANAZAWA S, ISHIKAWA M, KOTERA M, HAYASHI T, SUEHIRO M, TSUNODA T, TANEMOTO K: Gait Training for Lower Leg Edema in Patients Experiencing Sclerotherapy or Operative Procedures for Leg Varicose Veins 101-107

It is well known that lower leg edema occurs in patients who have undergone sclerotherapy and operative procedure or such operative procedures as high ligation of the long and short saphenous veins or ligation of the perforator branch for varicose veins of the legs. To date, there have been no reports regarding rehabilitation approaches for patients who have undergone the above mentioned procedures. We evaluated the efficacy of gait training to improve such lower leg edema.

Group I: sclerotherapy only, group II: operative procedure, group III: both sclerotherapy and operative procedure, group IV: as controls inpatients with no leg varicose vein who had undergone a tonsillectomy. As rehabilitation therapy, the subjects were required to do 1) 20 minutes walking on the floor to activate the venous foot pump function, 2) to go up and down steps to activate the venous muscle pump function, and 3) to undergo added compression therapy using an elastic bandage and elastic stocking. In group I, the leg edema improved within several days due to the use of an elastic bandage or elastic stocking and no recurrence was encountered. Regarding operation therapy, in group I, strong leg edema occurred on the first postoperative day. In group II, it occurred again on the seventh postoperative day after compression therapy. In group III, no leg edema occurred again. Our results have led us to conclude that walking and going up and down steps as gait training soon after surgical procedures are very effective for decreasing lower leg edema.

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SHIMABARA M, KUBOKI M, OHMOTO K, IWAMOTO S, TSUNODA  
T: A Case of Small Solid-Pseudopapillary Tumor of the Pancreas Complicated by  
Lymph Node Metastasis 109-113

A 27-year-old woman visited our hospital, because she had experienced severe epigastric pain. The diagnosis on admission was acute pancreatitis, which was determined by elevation of urinary amylase. A hyperechoic tumor was detected in the pancreatic body-tail position ultra-sonographically. CT and MRI detected the tumor as a cystic tumor, and also disclosed dilatation of the distal pancreatic duct. Therefore, a distal pancreatectomy and a splenectomy were performed. The lesion was pathologically diagnosed as a solid-pseudopapillary tumor of the pancreas. It is very rare for this type of tumor to have malignant potential, but, in this case, the tumor was complicated by lymph node metastasis.