The British Society of Gastroenterology

The Annual General Meeting of the British Society of Gastroenterology was held at Bristol on 5 and 6 November 1965 with Mr. W. M. Capper as the President and Dr. A. E. Read as the Local Secretary. A very successful annual dinner was held in the Senate House of the University.

At the annual general business meeting the following officers were elected:—

President-Elect: F. Avery Jones
Hon. Treasurer: G. D. Hadley
Hon. Secretary: A. E. Read
Asst. Secretary: J. E. Lennard-Jones

The following were elected Ordinary Members:—


The following were elected Associate Members:—


At the Scientific Meeting papers were presented of which the following are summaries:

CELL LOSS FROM HUMAN GASTRIC MUCOSA MEASURED BY THE ESTIMATION OF DEOXYRIBONUCLEIC ACID (DNA) IN GASTRIC WASHINGS

D. N. Croft, D. J. Pollock, and N. F. Coeghill (London) Using a method of saline perfusion the rate of accumulation of DNA in the stomach was measured in patients with normal gastric mucosa, with pernicious anaemia, and with simple atrophic gastritis. Patients with normal mucosa, or pernicious anaemia, had low DNA rates. A majority of patients with simple atrophic gastritis had much higher values. In gastric biopsy specimens significantly higher epithelial mitosis counts were found in treated pernicious anaemia and simple atrophic gastritis than in normal mucosa. The data appear to indicate a higher turnover of surface epithelial cells in atrophic than in normal gastric mucosa.

AUTO-ANTIBODIES AND THE HISTOLOGY OF THE GASTRIC MUCOSA

R. Wright, S. N. Salem, K. F. Schiller, and A. G. Wangel (Oxford) Gastric biopsies were obtained using a Crosby capsule from the fundus of the stomach under radiological control from 150 patients with a variety of disorders, including ulcerative colitis, the irritable colon syndrome, treated thyrotoxicosis, pernicious anaemia, iron-deficiency anaemia, and psoriasis. Histological sections were examined and the appearances graded as normal, superficial gastritis, atrophic gastritis, and gastric atrophy.

A specimen of blood was taken at the time of biopsy and serum tested for gastric-parietal cell, thyroid, and intrinsic factor antibodies.

The relationship between the severity of the histological changes and the incidence of auto-antibodies will be presented and the value of gastric parietal-cell and intrinsic factor antibodies as an index of gastric mucosal damage and their role in the pathogenesis of the lesions discussed.

FRACTIONATION OF GASTRIC SECRETION BY THE GEL FILTRATION METHOD

J. Schrager (Wigan) Attempts have been made in this laboratory to fractionate the gastric secretion by gel filtration. Sephadex G 100 and G 200, Bio-Gel P, and Agarose gels were used. The filtration resulted in effective separation of three fractions: (1) macromolecular fraction; (2) pepsin; (3) polypeptide.

The carbohydrate components and amino-acid composition of the macromolecule was then further investigated. The gas liquid chromatography method was adapted for the estimation of carbohydrates in biological fluids and used in the study of the carbohydrate components of the macromolecule. The amino-acids were analysed on the Auto Technicon amino-acid analyser. Quantitative analysis shows that the macromolecular fraction contains all the glucosamine, galactosamine and fucose, 70% of the sulphate, and 40-50% of the N-acetyl neuraminic acid of the filtered gastric secretion. It also contains all the blood group activity. None is found in the second or third fractions.

The amino-acid analysis revealed that 50% of the protein moiety consists of threonine and serine. The ratio of the polar to apolar amino acids is 5 : 1. This is a unique amino-acid composition. We have established the following interesting ratios:

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>N-acetyl glucosamine: N-acetyl galactosamine</td>
<td>2 : 1</td>
</tr>
<tr>
<td>Threonine: serine</td>
<td>2 : 1</td>
</tr>
<tr>
<td>N-acetyl glucosamine: threonine</td>
<td>2 : 1</td>
</tr>
<tr>
<td>N-acetyl galactosamine: serine</td>
<td>2 : 1</td>
</tr>
<tr>
<td>N-acetyl glucosamine: galactose</td>
<td>2 : 1</td>
</tr>
<tr>
<td>Fucose: galactose</td>
<td>1 : 1</td>
</tr>
<tr>
<td>N-acetyl-neuraminic acid: N-acetyl galactosamine</td>
<td>1 : 1</td>
</tr>
</tbody>
</table>
Our results suggest that the gastric mucopolysaccharide macromolecule consists of a protein core to which are attached carbohydrate side chains. Two types of side chains are tentatively suggested.

(A) This side chain consists of N-acetyl glucosamine, galactose, fucose, and sulphate.

(B) The second side chain consists of N-acetyl galactosamine, glucose, mannose, and N-acetyl neuraminic acid, and probably also galactose.

The ratio of side chain A to side chain B is 2 : 1. There is also tentative evidence that side chain A is attached to the amino-acid threonine and side chain B to the amino-acid serine. The mucopolysaccharides of patients with duodenal ulcers appeared to be deficient in sulphate and N-acetyl-neuraminic acid.

THE SIGNIFICANCE OF A RAISED SERUM ALKALINE PHOSPHATASE AFTER PARTIAL GASTRECTOMY

G. R. THOMPSON, G. NEALE, AND C. C. BOOTH (London)

Bone disease is now a well-recognized complication of partial gastrectomy, usually combining the features of osteoporosis with those of mild osteomalacia. Since the latter responds readily to small oral doses of vitamin D, its direction is of some importance.

The most widely used screening test for post-gastrectomy bone disease is estimation of the serum alkaline phosphatase. However, this can also be elevated by other disorders such as Paget's disease and hepatic dysfunction.

Thirty-five postgastrectomy patients, of whom 28 had a raised serum alkaline phosphatase level, have been studied in detail. Investigations included tests of liver function, bone biopsy, calcium infusion, and skeletal survey. Although an appreciable number of patients had Paget's disease or abnormal liver function, in general an elevated serum alkaline phosphatase level was suggestive of bone disease of the osteomalacic type.

THE FUNCTIONAL AND METABOLIC EFFECTS OF TOTAL AND SELECTIVE VAGOTOMY

E. J. WILLIAMS AND W. T. IRVINE (London)

Vagotomy combined with a drainage procedure is gaining popularity as the operation of choice for chronic duodenal ulceration. It is occasionally followed by undesirable sequelae, notably diarrhoea and steatorrhoea, and it has been reported that these complications can be reduced by selective vagotomy. In this study, the functional and metabolic effects in 43 patients before and after total vagotomoy and in 22 patients before and after selective vagotomy have been analysed. Investigations have included faecal fat excretion, blood lipid levels following a fatty meal, cholecystography, lactose tolerance, intestinal flora and full blood examination. The results are discussed in relation to the incidence of diarrhoea and steatorrhoea.

SURGICAL TREATMENT OF THE ZOLLINGER-ELLISON SYNDROME

RODNEY SMITH (London)

The Zollinger-Ellison syndrome is rare, only some 300 cases having been reported since the syndrome was first described 10 years ago. It is suggested that information available is not yet adequate to allow any dogmatic pronouncement about a standard line of surgical treatment. It has frequently been argued that, because the pancreatic tumour is often malignant, sometimes with functioning metastases, or, when benign, is often multiple, that tumour removal may frequently be incomplete and a better approach would be to perform routine gastrectomy. This argument requires critical appraisal and is open to several objections.

A personal series of seven cases contains several where total gastrectomy was not performed and clearly would have been inappropriate.

EXPERIENCE WITH A NEW PANCREATIC FUNCTION TEST

H. B. COOK, J. E. LENNARD-JONES, S. M. SHERIF, AND H. S. WIGGINS (London)

Lundh has suggested that trypsin determinations in duodenal aspirates collected after the physiological stimulus of a meal give a good measure of pancreatic function. In this study the test has been simplified by reducing the number of collection periods, and by modifying the method of trypsin determination so that it can be performed in a routine laboratory. Over 100 tests performed in various conditions will be reported. The test has proved particularly useful in the differential diagnosis of steatorrhoea and obstructive jaundice and valuable in the detection of pancreatitis and carcinoma of the pancreas. It is easy to perform, reproducible, and requires no elaborate equipment.

THE SECRETORY RESPONSE OF THE HUMAN Pancreas in normal and disease states to CONTINUOUS INTRAVENOUS INFUSION OF SECRETIN AND PANCREOZYMIN

J. G. BANWELL, B. C. NORTHAM, AND W. I. COOKE (Birmingham)

Secretin and pancreozymin can now be administered in high doses without causing severe side effects. Continuous intravenous infusion of secretin and pancreozymin has been used to study the maximal response of the human pancreas. The volume and bicarbonate output of duodenal juice increased with increasing rates of secretin infusion, and a maximal response for both parameters was reached with secretin infusion rates of 4 to 8 units/min. The maximal output will be compared to the responses to a secretin-pancreozymin test and to the outputs from patients with chronic pancreatic disease and other gastrointestinal disorders. The effects of pancreozymin infusion will be discussed. The protein content of duodenal juice will be compared with amylase output as a measure of pancreatic exocrine activity.

THE RESPONSE OF HUMAN GASTROINTESTINAL SMOOTH MUSCLE TO 5-HYDROXYTRYPTAMINE

J. J. MISIEWICZ AND SHEILA L. WALLER (London)

5-Hydroxytryptamine is widely distributed in the gut but its physiological role is still uncertain. It has been postulated...
that it may play a part in the pathogenesis of some gastrointestinal disorders. Its effect on motility has not been investigated extensively in man and existing studies are virtually limited to the small intestine.

Using a combination of radiopills and tubes it has been possible to measure the effect of this compound on the motility of the stomach, jejunum, ileum, and the right and left colon, in vivo. The results obtained in patients have been correlated with studies in vitro on human intestinal muscle strips from surgical specimens.

5-Hydroxytryptamine was found to have a differential effect on the gut, depending on the anatomical site. Small intestinal muscle was stimulated, whereas colonic muscle was inhibited and gastric muscle gave a variable result both in vivo and in vitro. Oesophageal muscle was stimulated in vitro.

A preliminary pharmacological analysis suggests that 5-hydroxytryptamine acts directly on the smooth muscle cell.

**INHIBITION OF D-XYLOSE ABSORPTION BY L-HISTIDINE**

H. L. DUTHIE, J. H. H. WEBSTER, AND J. T. HINDMARSH (University Department of Surgery, Royal Infirmary, Sheffield) In 10 normal men, 15 g. of L-histidine was given orally two hours before a dose of 5 g. of d-xylose. The urinary excretion of xylose in the next five hours was significantly less than when d-xylose was given alone. The following possible explanations have been investigated. (1) A delayed excretion of xylose did not occur. (2) Interference with the method of measuring urinary xylose was not found when histidine excretory products were present. (3) L-Histidine given orally to 10 patients did not change the excretory rate of d-xylose given intravenously. Using everted loops of hamster intestine in vitro, the addition of L-histidine significantly inhibited the transport of d-xylose from mucosa to serosa: that this action was not specific to histidine was shown by a similar inhibition with L-methionine. This inhibition would suggest that d-xylose and L-histidine are competing for a common absorption mechanism which must be rate limiting and supports the possibility of active transport or carrier-assisted diffusion of d-xylose across the intestine.

**CATECHOLAMINE RELEASE IN THE LOWER GASTROINTESTINAL TRACT**

A. G. PARKS, D. J. FISHLOCK, J. D. H. CAMERON, AND H. MAY (London) Strips of human colonic circular muscle and internal sphincter ani have been taken from operation specimens and investigated pharmacologically.

Adrenaline, noradrenaline, and isoprenaline caused relaxation of colonic circular muscle. Ganglion-stimulating agents have also caused relaxation of this preparation. The catecholamines and ganglion-stimulating agents can be antagonised by alpha and beta adrenergic blocking agents. These results are consistent with the current view that nicotinic substances cause the release of nor-adrenaline from tissue stores.

However, the internal sphincter muscle contracted in the presence of noradrenaline, relaxed with isoprenaline, and was variable in response to adrenaline. The upper part of the sphincter responded to ganglion-stimulating agents by relaxation and this could be antagonised by alpha and beta adrenergic blocking agents. It is concluded that the catecholamine released at this site cannot be noradrenaline but must be an isoprenaline-like substance.

The implication of these observations on present-day views of sympathetic transmitter substances will be discussed.

**THE READY ABSORPTION OF MEDIUM CHAIN TRIGLYCERIDE IN THE STEATORRHEA SYNDROME**

B. J. SMITS, P. WILDING, AND W. T. COOKE (Birmingham) A number of patients with steatorrhoea arising from different causes were maintained on experimental diets in which normal dietary lipid was replaced in equivalent calorie content by triglyceride of medium chain length, prepared from fractionated coconut oil. These patients, all of whom had gross steatorrhoea while on a normal diet, absorbed medium chain triglyceride well and their faecal lipid output fell to normal levels. The implications and possible applications are discussed with particular reference to provision of a readily assimilable source of calories in the treatment of malnutrition of any cause, especially in malabsorption.

**STEATORRHEA AND MALIGNANT LYMPHOMA**

C. F. MCCARTHY, W. I. AUSTAD, K. T. EVANS, AND A. E. READ (Bristol) A group of patients with malignant lymphoma and steatorrhoea have been studied. Evidence is presented to suggest that some of these patients have idiopathic steatorrhoea (coeliac disease). The clinical changes leading up to the diagnosis of the presence of lymphoma are described and the radiological and pathological changes are also presented. Tumours of the small bowel complicating idiopathic steatorrhoea are most common in the jejunum and are usually either reticulosarcoma or Hodgkin's disease. Thus they differ in type and site from primary small bowel lymphoma.

**CALCium ABSorption IN CANINE SMALL INTESTINE**

J. BAMFORTH, AND C. F. CODE, INTRODUCED BY B. CREAMER (London) Calcium absorption was studied in dogs, using duodenal and ileal Thirty-veila loops in vivo. The bidirectional fluxes were established by the use of radio-calcium. The rate of transfer of calcium into the lumen (exsorption) was found to be independent of the luminal concentration. Transfer out of the lumen (insorption) was concentration-dependent, but the data suggest that a more efficient, possibly active, process was operative at low concentrations. Precipitation of calcium, mainly as the bicarbonate, occurred to a significant degree in ileal but not duodenal loops.
MALIGNANT CHANGE IN ULCERATIVE COLITIS

F. T. DE DOMBAL, J. M. WATTS, G. WATKINSON, AND J. C. GOLIGHER (Leeds) An analysis is presented of all the frank invasive carcinomas of the colon and rectum which were discovered during the follow-up of 465 patients with ulcerative colitis.

The fatality rate due to carcinoma in this group was 11 times the expected fatality rate in a matched sample of the general population. Carcinoma occurred almost exclusively in patients with total involvement, and with a 10-year history of colitis. The cumulative incidence of carcinoma is shown to rise in patients with total involvement to no less than 42% after 25 years' duration of colitis symptoms.

The long-term risks due to colitis and its complications are analysed. These are shown to be far greater in patients with total involvement on present-day treatment than in a control group of patients after elective proctocolectomy. The question of prophylactic proctocolectomy for patients with total involvement is discussed.

ISCHAEMIC COLITIS

A. MARSTON, M. T. PHIELS, M. LEA THOMAS, AND B. MORSON (London) Acute ischaemia of the colon occurs in the same way and in the same age group as cerebral and myocardial infarction. The outcome depends on the nature and duration of the vascular occlusion and the bacterial flora. Severe ischaemia leads to gangrene. Minor ischaemia causes transient mucosal loss followed by healing, with characteristic radiographic signs. An intermediate state exists which results in the formation of a fibrous stricture, usually mistaken for ulcerative or regional colitis. Seventeen cases are presented to illustrate the characteristic features of the syndrome, with aortographic and histological evidence to confirm its vascular basis, and suggestions made regarding management.

RADIOLOGY OF CROHN'S DISEASE OF THE COLON AND RECTUM

A. C. YOUNG (London) Locally, the rectal and colonic mucosa shows polypoid change, linear and cobblestone ulceration, and fissuring. Radiographic changes are usually discontinuous both axially and circumferentially, hence 'skip' lesions and eccentric involvement of the bowel wall. Partial loss of haustral folds and 'puckering' occur on one side of the lumen.

Grossly abnormal segments are separated from normal bowel by transition zones of gradually diminishing involvement: these are conical or, rarely, like an onion-shaped dilatation. When the disease is continuous, sparing of the rectum or enlargement of the ileocaecal valve may help in identification. Radiological diagnosis is never absolute but is often highly suggestive.

THE EPPING JAUNDICE: A NEW FORM OF TOXIC HEPATITIS

H. KOPELMAN, P. J. SCHEUER, AND ROGER WILLIAMS (London) An outbreak of an unusual form of jaundice occurred in the Epping area in February 1965. Over 80 persons were affected, of whom 57 were investigated by liver function tests and six by liver biopsy.

The disease showed features of a cholangitis and the commonest presenting symptom was severe abdominal pain. Liver biopsy revealed predominant cholangitis together with eosinophil infiltration of the portal tracts and some evidence of diffuse hepatic damage. The duration of disease varied considerably and one patient had a serum bilirubin level of 26 mg./100 ml. three months after the onset.

Flour contaminated in transit by a chemical compound was found to be the cause.

DRUG METABOLISM IN LIVER DISEASE

A. J. LEVI AND D. M. WALKER (London) The hypothesis that liver disease impairs drug metabolism in man has been investigated by measuring the plasma disappearance rate of two different drugs.

The first, phenylbutazone, is hydroxylated by a microsomal enzyme system and the second, isonicotinic acid hydrazide, is acetylated by a non-microsomal acetylase. There are significant differences between the results found in subjects with liver disease and normals. Such differences have rarely been demonstrated before. A possible explanation for this is given.

It is suggested that many factors may affect an individual's dose requirements for a particular drug. The old idea that aspirin gr. 10 four hourly is the correct dose for all adults with the 'flu may be a generalization that leads to toxic accumulation in some, and uncontrolled symptoms in others.

OESOPHAGEAL ACID PERFUSION IN THE DIAGNOSIS OF CHEST PAIN

JOHN R. BENNETT AND MICHAEL ATKINSON (Worcester) The differentiation of oesophageal pain from cardiac pain is a frequent and important diagnostic problem which may be difficult on clinical grounds alone. We have investigated the use of oesophageal perfusion with hydrochloric acid as a provocative test for oesophageal pain.

In 39 patients considered to have oesophagitis the test was positive in 34 and equivocal in another three. It was negative in nine patients with angina pectoris, although two experienced heartburn quite different from their cardiac pain. Of 14 normal subjects, eight experienced mild heartburn.

Manometry revealed that induced pain was associated with increased peristalsis or synchronous contractions in some patients, but these changes were often seen in the absence of pain and in some normal subjects. In 11 patients intravenous propantheline reduced motility, but only relieved pain in four.