Undiagnosed Abdominal Pain

A common and perplexing problem for the medical practitioner is the patient with undiagnosed abdominal pain. In children and adolescents it tends to be in the right iliac fossa, so that the question of recurrent attacks of appendicitis is raised, whereas in middle-aged people it tends to be located in the upper abdomen and simulates a peptic ulcer. Most of these patients undoubtedly have psychosomatic disease, but there is the constant anxiety that some organic condition, perhaps of a serious nature, might be overlooked.

In his important investigation on 200 children with recurrent abdominal pain J. Apley found organic disorder in 7%, of which about half had lesions in the urinary tract (chronic renal infection, hydronephrosis, and so on). That children do not “grow out” of these pains was shown by a follow-up of 30 patients reviewed 8 to 20 years after attending a children’s hospital with non-organic recurrent abdominal pain. Nine were by then completely well, but 12 continued to have abdominal pain, often accompanied by headache or other additional symptoms, and 9, though free from abdominal pains, had continuing symptoms such as migraine or dysmenorrhea. The proportion of cases with bodily or nervous complaints was several times higher than in a control group who had attended the same children’s hospital for minor physical disorders.

Many children and young adults are submitted to appendicectomy because of recurrent pain in the right iliac fossa. A normal appendix is removed, and a label of “chronic appendicitis” or “chronic non-specific mesenteric adenitis” is attached to the patient’s record. The surgeon hopes that all will now be well, but this is unfortunately far from always being so. P. W. Ingram and G. Evans reported a follow-up carried out one year or more after appendicectomy on 87 young women. Thirty-two had had diseased appendices removed and 29 of these patients were satisfied. Fifty-five had had normal appendices removed and 30 of these were unsatisfied with the result, because of either the continuation or the recurrence of their abdominal pain or because of the development of other psychosomatic symptoms. Emotional problems were found to be more prevalent in patients with persistent symptoms than in those who had been cured. J. G. R. Howie has confirmed the rather poor result of removing a normal appendix and suggests “that the place of planned appendicectomy for mild or recurrent iliac fossa pain is a very restricted one.”

In an interesting study O. W. Hill and L. Blendis compared a group of patients with abdominal pain for which no organic cause could be found with a carefully matched control group of patients with peptic ulcer. Most of the patients without organic cause complained of epigastric pain accompanied by distension, belching, and nausea without vomiting and without loss of weight. These symptoms, together with an absence of periodicity in the pain and failure to gain relief from food, differed from those of the organic group. The patients with non-organic disease tended...
Measuring Digoxin

The cardiac glycosides, of which digoxin is the most commonly prescribed in the United Kingdom, are potent and useful drugs, but they have serious toxic effects at a dosage near that required for treatment. Though simple formulae have been proposed that relate the required dosage of digoxin and digitoxin to renal function,1 2 these drugs are often prescribed in a haphazard way, such that 20% of patients in one study showed signs of toxicity.3

The considerable incidence of undesirable effects necessitated the development of methods of measuring digoxin in the patient. Techniques using chromatography, spectroscopy, and bioassay proved to be insufficiently practical or sensitive, while clinical measurement of the drug’s effects based on changes in the electrocardiogram4 or in the character of the carotid pulse5 are useful only when comparison is made with recordings made before administration of digoxin.

Earlier methods with isotopes6-9 were either laborious or required the patient to take the isotope-labelled drug. These objections cannot be levelled at two recently developed methods. One of them depends on the inhibition by digoxin of the uptake of rubidium-86 by red cells.10 11 The other is a radioimmunoassay—an isotope dilution technique12 using antibodies to digoxin raised in rabbits.13 Similar methods can be applied to the measurement of digitoxin. It should be emphasized that the measurement of the free digoxin in the serum is of the pharmacologically active fraction. Digoxin bound to the heart, the fraction traditionally thought to be responsible for its action, is now known to be in association with lipid and protein, and, like the plasma protein-bound fraction, although it is in equilibrium with the free drug, it is pharmacologically inert in the bound state.14

In the B.M.J. this week Dr. D. C. Evered and colleagues (page 427) and Dr. D. A. Chamberlain and colleagues (page 429) report on the use of radioimmunoassay. There is a correlation between dosage and serum level, especially when patients with normal renal function are considered. The greater risk of toxic effects in elderly patients is apparently wholly or partially due to poorer renal function. However, though a higher mean serum level was recorded in a group of patients showing evidence of overdosage, there was considerable overlap with the range of results found on other patients. Furthermore the ventricular rate in atrial fibrillation correlated poorly with dosage, presumably partly because digoxin is not the only factor influencing atrioventricular conduction.

These findings show that variation in response to digoxin is not all due to variation in absorption, distribution, metabolism, or excretion: there is considerable individual variation in sensitivity to the drug. Thus, measurement of digoxin in the serum is of limited value in predicting its effect on the heart. However, this test may help to simplify the investigation of factors influencing sensitivity to digoxin—such as other drugs, autonomic influences, depletion of potassium, advanced heart failure, anoxia, and thyroid metabolism.

The test has several possible clinical applications. Some arrhythmias, notably supraventricular tachycardia, nodal tachycardia, and atrial fibrillation, may be treated with digoxin. But they may also be caused by digoxin,15 in which case the drug should usually be discontinued. Cardioversion, an alternative treatment for these arrhythmias, is contraindi-