Investigation of acute gastroenteritis in general practice—relevance of newer laboratory methods

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SUMMARY. Over a nine-month period, all patients suffering from acute gastroenteritis, with diarrhoea as an essential component, who presented to a group practice in southern England were investigated using conventional laboratory methods, and also newer techniques of electron microscopy and search for species of *Campylobacter*. *Rotavirus* and *Campylobacter* were the two most commonly encountered pathogens.

Introduction

THE last 10 years or so have seen great advances in the understanding of causes of gastroenteritis, in all parts of the world. Perhaps the most striking were the recognition of the role of viruses, especially *Rotavirus*, once these agents could be recognized by electron microscopy of faecal samples.[1-3] Skirrow[4] drew attention to the frequent isolation of *Campylobacter* species from faecal samples from general practice. These small, spiral Gram-negative organisms grow best at 42°C in a microaerophilic atmosphere, and these cultural conditions are now available in most microbiology laboratories. Skirrow has recently reviewed[5] the first five years of this organism.

Finally, there came the discovery of enterotoxin-producing *Escherichia coli*, a well recognized cause of diarrhoea worldwide and a significant contributor to 'traveller's diarrhoea'.[6] More conventional pathogens are also enjoying a kind of Indian summer—*Giardia lamblia* comes most readily to mind.[7]

Investigation of causes of gastroenteritis in general practice in the United Kingdom does not appear to be a popular activity. Up to 1979 the author found only the short reviews of Smither,[8] Tuckman and colleagues,[9] Knox and colleagues,[10] and the more extensive review by Thomas and Tillett[11] which covered a period from 1953–68, and refers in the main to specimens sent to a laboratory presumably for specific diagnostic purposes. More recently, a survey by Kendall and Tanner[12] concentrated on isolations of *Campylobacter*.

This survey involved unselected patients, many of whom would not normally have warranted investigation.

Method

The practice had four doctors and about 10,000 patients in a town in the south of England with a population around 30,000. At least one sample of faeces was obtained from each patient presenting with a typical history of acute gastroenteritis, with diarrhoea as a component of the illness. Patients were excluded if they had received antibiotics less than four weeks prior to the illness. They could present not only to one of the doctors, but also to a nurse or health visitor, or even telephone for advice. The house of each patient was visited for completion of an epidemiological questionnaire.

The samples were taken to a nearby laboratory within four days of onset of the illness. Routine methods were used for culturing *Salmonella*, *Shigella*, and enteropathogenic *Escherichia coli*. Direct microscopy for ova, cysts and parasites was done on all samples. In addition, samples were examined for *Campylobacter* species. Each stool was examined by electron microscopy for virus particles; virus isolation on monkey kidney cells was also attempted on each sample.

The survey ran for nine months from November 1977 to July 1978, and 73 patients were included in the survey.

Results

The number of adults and children are shown in Table 1, together with the male to female ratio. The results of the bacterial and viral examinations are shown in Table 2.

It is not the purpose of this report to enter into the epidemiological details of these cases. It was not possible to ascertain a likely source of the infection in every case, even with a positive isolate. Many patients had

Table 1. Details of the 73 patients in the study.

	Male	Female	Age range	Average age (years)	Total number of patients
Adults	22	17	15–72	37.5	39
Children*	23	11	5 months–13 years	3.5	34

*Aged less than 14 years.

Table 2. Results of laboratory investigations.

Organism	Positive isolates		Infected patients	
	Number	Percentage	Adults	Children
Salmonella	2	*2.7*	—	2
Shigella	1	*1.3*	1 *(sonnei)*	—
Campylobacter	11	*15.0*	5	6
Rotavirus	13	*17.8*	4	9
Adenovirus	1		—	1
Parasites ova, cysts	Nil		—	—
Escherichia coli enteropathogenic	Nil		—	—
Escherichia coli enterotoxigenic	Not done			
Viral culture	Nil		—	—
Total	28	*38*	10*(25)*	18*(53)*

eaten out a variable number of days before the illness, sometimes at restaurants, sometimes at work. Some had been in contact with another case, but most illnesses were isolated, sporadic events. However, there were some interesting individual case stories, and two involving *Campylobacter* are given below.

Case 1

Mrs P., a lady in her late thirties, became ill on a Monday with diarrhoea, shivering, sweats, and one episode of vomiting. She also had considerable abdominal discomfort. A species of *Campylobacter* was isolated from her faeces, and she continued to excrete this organism for five weeks. She alone had had fish and chips for lunch on the Friday before, but the suspect meal was a chicken barbecue on the Saturday, although the whole family (husband and two children) ate this meal. None of the remaining members of the family became ill, neither did they have campylobacters in their faeces. Tests were also made on a pet rabbit, a cat, and a fish tank. It was only on the second visit that the patient admitted to having prepared the chicken for the barbecue, and also to having removed her piece from the grill well before the husband had finished cooking the four pieces.

Case 2

R. C., a 13-year-old boy, had a typical campylobacter enteritis, with high fevers up to 104°F for three days followed by diarrhoea and cramping abdominal pains. The whole illness lasted nearly two weeks. Chicken had been eaten by the whole family the day before his illness began, but all the other family members were negative for *Campylobacter*. The boy owned a puppy which had had loose bowels for two weeks or more, said to be due to worms; but it persisted after treatment and, on testing, a species of *Campylobacter* was isolated from the puppy's faeces. In addition another species of *Campylobacter*, morphologically different, was isolated from an older, healthy family dog. On biotyping, the boy's *Campylobacter* and the puppy's appeared identical, but the isolate from the other dog was quite different and somewhat unusual.

Other cases of gastroenteritis associated with chicken and sick puppies have now been well described several times.

The two isolates of *Salmonella* are of interest as these cases would not normally have come to the doctors' attention. One child, aged 8 months, was thought to have only a diet problem. Sources of these two isolates were never discovered.

Discussion

It can be seen that a search for conventional pathogens among these 73 cases would have revealed a known cause of gastroenteritis in only three. Although sonnei dysentry was more common in the earlier reports already mentioned, a low level of positive findings was the rule. Only one isolate of *Shigella sonnei* was recorded here, and this reflects the steady decline in the incidence of this disease in recent years.[13]

By contrast, the bulk of the positive isolates were either species of *Campylobacter* or *Rotavirus,* and these two agents are probably the commonest recognizable causes of gastroenteritis in general practice. The completely negative results from viral culture probably reflects the fact that the survey stopped just before the enterovirus season, which could otherwise have produced some positive results, and the failure to culture 'gastroenteritis' viruses on conventional cell lines.

The author himself spent five years in general practice, and one of the interesting facets of this survey was to assess its usefulness from 'both sides of the counter'. From among the 73 cases it was possible to identify 15 that would have warranted a laboratory test of the patient's faeces for various clinical and epidemiological reasons. Tests in five of these cases would have proved positive, and all five were cases of campylobacter enteritis. Although even this comparatively severe form of gastroenteritis is usually self-limiting, it is potentially treatable with erythromycin if symptoms are particularly troublesome or prolonged. It was therefore gratifying to note that the newer laboratory tests had proved useful data for the general practitioner. This is not to belittle the benefits also derived from merely being able to put a label on an illness, albeit self-limiting such as rotavirus diarrhoea, and thereby enhance the confidence both of the practitioner and the patient.

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GENERAL PRACTICE LITERATURE

BOOK REVIEWS

MILESTONES. THE DIARY OF A TRAINEE GP

Peter Stott

Pan Books, London (1983)

236 pages. Price £1.75 (paperback)

I enjoyed *Milestones*. It is easy to read and anyone working in general practice can immediately identify with Dr Stott, his problems and his patients.

Milestones is encouraging because it demonstrates some of the sophistication which is usual in the trainees of the 1980s and which would have been unusual even 10 years ago.

There is much to learn from this book and I am recommending it to undergraduates, although all of us could read it with pleasure and profit.

JAMES S. MCCORMICK

DOCTOR/PATIENT COMMUNICATION

David Pendleton, John Hasler (Editors)

Academic Press, London

293 pages. Price £16.80

This is a collection of essays by some of the outstanding current figures in general practice and related behavioural science. The editors are well known College figures, and Dr Pendleton's main contribution to the book is an excellent review of the previous research into the complex area of doctor–patient communication. In line with this chapter, the other contributions are stimulating and well-referenced essays which cover such diverse areas as 'Doctors, patients and their cultures', 'Communication skills' and 'Training in the United Kingdom'.

Part 4 of the five-part book is the largest section with four different essays concerned with medical education and medical practice in relation to doctor–patient communication, and it is perhaps this section which will be of most relevance to trainers and course organizers. However, the book will appeal to all general practitioners who are interested in learning more about the consultation.

E.G.B.

BOOKS RECEIVED

THE AGORAPHOBIC SYNDROME. Behavioural approaches to evaluation and treatment, *Geoffrey L. Thorpe and Laurence E. Burns, Wiley, Chichester. 1983. 237 pages. Price £16.00.*

NUTRITION IN PREGNANCY. Proceedings of the Tenth Study Group of the Royal College of Obstetricians and Gynaecologists, *D. M. Campbell and M. D. G. Gillmer (editors), Royal College of Obstetricians and Gynaecologists, London. 1983. 284 pages. Price £7.00 (paperback).*

DRUGS AND PREGNANCY. Human teratogenesis and related problems. *D. F. Hawkins (editor), Churchill Livingstone, Edinburgh. 1983. 243 pages. Price £10.00.*

EFFECTIVENESS AND SATISFACTION IN ANTENATAL CARE, *Murray Enkin and Iain Chalmers (editors), Spastics International Medical Publications/Heinemann, London. 1983. 297 pages. Price £15.00.*

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CHINESE MASSAGE THERAPY. A handbook of therapeutic massage, *compiled at the Anhui Medical School Hospital, China, Hor Ming Lee and Gregory Whincup (translators), Routledge and Kegan Paul, London. 1983. 230 pages. Price £7.95 (paperback).*

THE HEALTH CARE MANUAL. A family guide to self-care and home medicines, *John Fry and Gordon Fryers (editors), MTP Press, Lancaster. 1983. 320 pages. Price £3.95 (paperback).*

COMMON DISEASES. Their nature, incidence and care. 3rd edition. *John Fry, MTP Press, Lancaster. 1983. 446 pages. £13.95*

COMMON DILEMMAS IN FAMILY MEDICINE, *John Fry (editor), MTP Press, Lancaster. 1983. 401 pages. Price £15.95.*

ATLAS OF OPHTHALMOLOGY, *Michael G. Glasspool, MTP Press, Lancaster. 1982. 128 pages. Price £24.95.*

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DIARY OF A MEDICAL NOBODY, *Kenneth Lane, Transworld Publishers, London. 1983. 252 pages. Price £1.75 (paperback).*

BID THE SICKNESS CEASE. Disease in the history of Black Africa, *Oliver Ransford, John Murray, London. 235 pages. Price £12.50.*