Breast transillumination using the sinus diaphanograph

Transillumination in the diagnosis of breast disease was first used about 50 years ago.¹⁻³ The sinus diaphanograph is a recent development that provides a light beam of variable intensity. When it is used at the lowest possible setting small lesions become capable of light interference and more subtle changes in tissue density can be visualised.

Diaphanoscopy is performed in a totally darkened room. Normal

and there was a two-week delay before the films were returned. No extra information was gained from these photographs.

The non-invasive nature of diaphanoscopy is a great benefit, and trials of the procedure are under way in Sweden. The ability of diaphanoscopy to detect minimal, non-palpable cancer is, however, unproved and our impression is that it would not be this sensitive. Although the most sophisticated instrument yet developed for transillumination, the diaphanograph has no place in a routine clinic but may occasionally be helpful in difficult cases, possibly reducing the number of referrals for mammography, or when mammography is unavailable. Alternatively diaphanoscopy may be repeated without risk and used to observe an at-risk group, particularly young women.

Diaphanoscopic appearance at first consultation compared with final diagnosis in 176 patients

Appearance on diaphanoscopy	Final diagnosis					
	Cancer	Cyst	Fibroadenoma	Fibroadenosis or normal	Abscess	Other
Cancer	13	1		1		
Cyst	2	15	5	2		
Fibroadenoma	1		5	5		
Fibroadenosis or normal	2	4	2	102		Fat necrosis Intraduct papilloma
Abscess	1				1	
Other						Galactocoele haematoma
Suspicious cancer	5	2	1	2		

breast appears reddish yellow according to the amount of adipose tissue present, areas of increased density—that is, tumours—are darker than their surroundings, but cysts may appear light or dark depending on the fluid therein. The manufacturers suggest that differential diagnosis is improved by using infrared photography (diaphanography), and for this the light emitter has a built-in flash unit. Thus fibroadenomas appear red and malignant tissue dark brown or black.

Patients, methods, and results

Transillumination was performed on 176 patients (age range 16-80 years) without clinical information. The final diagnosis after biopsy or follow-up was made by an independent examiner. Diaphanoscopy took five minutes and diaphanography another five.

Seventy-eight lesions were detected by both diaphanoscopy and palpation and eight by palpation alone. Biopsy specimens were taken of these eight lesions, of which two were cancers. No palpable lesions were detected by diaphanoscopy or mammography in this series. Overall, diaphanoscopy gave an accurate diagnosis in 143 (81%) of the cases (table). By diaphanoscopy carcinoma was diagnosed or suspected in 18 of the 24 cases, and biopsy was recommended in 22 (92%). Four cancers appeared benign on diaphanoscopy, and in two cases biopsy would not have been carried out on diaphanoscopy alone.

Comment

The object of the study was to see whether transillumination was of value as an aid to diagnosis and the need for biopsy. Biopsy (or aspiration) was recommended by diaphanoscopy in 65 cases, of which 55 showed appreciable disease and 10 were finally classified as fibroadenosis. Two cancers were missed: one was too high posteriorly to be successfully transilluminated, and the other was also missed on mammography. It was apparent that diaphanoscopy could not be used as the sole arbitrator for biopsy, and palpation proved to be more important.

Diaphanoscopy confirmed the clinical diagnosis of fibroadenosis in 102 out of 112 cases (91%). Only in three cases of fibroadenosis (2.7%) was biopsy recommended by transillumination because of a suspicion of carcinoma. Diaphanoscopy may be of value when there is clinical doubt about the diagnosis of fibroadenosis but is not necessary in most cases. It might, however, be repeated in young women with fibroadenosis to guard against the possibility of carcinoma, when repeated mammography may be inadvisable.

In difficult cases diaphanoscopy might prove a useful additional tool. Physical difficulties were experienced when examining lesions in small breasts, in the tail, and close to the chest wall, when escaping light tended to blind the observer. Although the manufacturers claim that diaphanography can be performed by a single operator this proved to be awkward. Infrared processing is not readily available

¹ Adair FE. Sanguinous discharge from the nipple and its significance in relation to cancer of the breast. *Ann Surg* 1930;91:197-209.

² Cutler M. Transillumination as an aid in the diagnosis of breast tumours. *Surg Gynecol Obstet* 1929;48:721-9.

³ Donnelly BA. Nipple discharge: its clinical and pathological significance. *Ann Surg* 1950;131:342-55.

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Attitudes to malarial prophylaxis

Between 1976 and 1980 inclusive 376 cases of malaria were notified in Scotland. This hospital admitted 108 patients with *Plasmodium vivax*, seven with *P falciparum*, and one with *P ovale* infection.

All patients with falciparum malaria had taken some form of prophylaxis, though only two "satisfactorily" (satisfactory being defined as regular ingestion of adequate doses of an antimalarial for the duration of the trip plus one month afterwards). Six of the seven patients were on home leave from working in Africa. The problem appeared to be irregular medication, or drug resistance, or both.

Of 71 patients with vivax infection available in Scotland for advice before travelling (that is, not immigrants or visitors), 49 had taken no medication while the remaining 22 had taken it unsatisfactorily. The problem appeared to be failure to think of prophylaxis or to consider it important. This prompted us to study attitudes to prophylaxis among travellers to North-west India and Pakistan, where most (93%) of the vivax malaria was contracted.

Patients, methods, and results

Contacts were made through a supermarket specialising in Asian foods, the National Bank of Pakistan, and other groups with Asian connections. A questionnaire was completed for each respondent describing his or her most recent trip in the past five years, with emphasis on antimalarial precautions taken.

There were 45 respondents, who had been accompanied by 59 relatives, 39 of whom were children below 15 years of age. In every instance relatives took the same immunisation and antimalarial precautions as the respondents. Twenty-one families had been to India and 24 to Pakistan. Responses were broadly similar for both groups.

How do you catch malaria?—Thirty-three respondents (73%) knew that malaria was caught from the mosquito. Two thought food and drink played a

part, seven did not know how the disease was caught, and three had not heard of it.

Have you suffered from malaria? If so, when?—Seven respondents (16%) had previously suffered malarial attacks. One of these was a British resident travelling abroad; in the six others the attacks had occurred before immigration.

What immunisations did you receive before travel?—Forty respondents (89%) had received typhoid, cholera, or smallpox immunisation before travelling.

Did you take tablets to prevent malaria? If no, why not?—Prophylactic measures taken against malaria had been satisfactory in three cases (7%) and irregular or stopped on return to this country in nine (20%); 33 respondents (73%) had not taken any prophylactic measures. Two of the three taking satisfactory precautions were doctors. Thirteen respondents thought that the risk did not warrant medication, four thought no malaria existed where they were going, and three thought that injections against other diseases had included malaria. Thirteen had not considered the problem at all.

Whom would you approach in the future for advice on malarial prevention?—All respondents said that their source of advice would be their general practitioner.

Comment

Most travellers did not take precautions against malaria, although immunisation was considered and accepted for other diseases. Some did not consider malaria to be dangerous. Others thought that it was not present in the areas they visited, implying ignorance of the upsurge of malaria throughout the Indian subcontinent over the past 10 years, which remains a cause for concern despite a fall in notifications recently.^{1 2}

The presence of malaria and the value of prophylactic measures might be discussed by the general practitioner when other immunisations are given, though now that smallpox has been eradicated international certificates are rarely required and there may be less opportunity for this. Other methods of contacting travellers such as through travel agencies or airlines may become increasingly important.

Reference centres with updated information on regional differences in parasite prevalence and resistance patterns might usefully be more widely advertised. A source of such information in Scotland is the Communicable Diseases (Scotland) Unit at Ruchill Hospital, Glasgow (telephone 041 946 7120).

We thank Mr I A Tervez, manager of the National Bank of Pakistan; Mr T Bedi, Bedi's Continental Food Company; and all others in Glasgow who co-operated and helped in collecting data.

Notifications for Scotland were to the Information Services Division of the Common Services Agency of the National Health Service, Edinburgh.

¹ WHO. Synopsis of the world malaria situation 1978. *WHO Weekly Epidemiological Record* 1980;55:193-200.

² Ray AP. Some aspects of Plasmodium falciparum containment programme. *Indian J Med Res* 1979;70:1-13.

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Isolation of *Clostridium difficile* from the small bowel

The association of *Clostridium difficile* and its cytotoxin with pseudomembranous colitis^{1 2} has stimulated interest in the presence of this organism in the gut. While the organism has been isolated from the faeces of both healthy infants and adults with antibiotic-associated disease and in intimate association with rectal mucosa,³ there has been no report of the isolation of *C. difficile* from the upper small intestine. We report the isolation of *C. difficile* from the proximal jejunum of a patient with diarrhoea.

Case report

An 80-year-old woman presented with a three-month history of diarrhoea. loss of 12 kg over the preceding year, and episodic left-sided abdominal pain,

Bowel actions of yellow, watery stools, with no blood or mucus, ranged from three to 10 times daily. She had had several episodes of diarrhoea in the past but extensive investigations had disclosed no cause, and it had responded to various antidiarrhoeal agents. In 1950 she had undergone laparotomy for perforation of the appendix and in 1965 cholecystectomy for gall stones.

Physical examination showed an enlarged spleen but no other abnormality. Sigmoidoscopy and rectal biopsy showed mild oedema but no other abnormality. Results of all laboratory investigations were normal. Appearances on barium-enema and barium meal and follow-through examinations were also normal. Examination of stools showed no ova, cysts, parasites, *shigellae*, or *salmonella*. Glucose-hydrogen and ¹⁴C-glycolate breath tests for small-intestinal colonisation were negative.

Jejunal fluid was aspirated by the method of Taylor and Waterman⁴ and cultured using the media and methods described by Borriello *et al.*⁵ Culture yielded three *Clostridium* spp: *C. perfringens* 10⁶/l, *C. difficile* 10⁵/l, and unidentified *Clostridium* spp 10⁶/l. No other organisms were isolated. The isolates were identified from colony and cellular morphology, carbohydrate fermentation patterns, and gas chromatographic analysis of volatile fatty acids.

Before the results of culture were known the patient was treated symptomatically with loperamide 2 mg four times daily, which controlled the diarrhoea. She gained 5 kg over the next six months and two years later remained well with no further treatment.

Comment

In view of the known association between faecal carriage of *C. difficile* and diarrhoea, this organism may have been a factor in the causation of diarrhoea in this patient. Unfortunately stool samples were not cultured for *C. difficile* or analysed for the cytotoxin at the time.

In a further group of 27 patients presenting with diarrhoea, culture of jejunal aspirates yielded *Clostridium* spp from only four specimens. Isolates were identified as *C. perfringens* (2), *C. subterminale* (2), *C. sporogenes* (1), and *C. formicoaceticum* (1). The highest count of *clostridia* found was 6.8 × 10⁶/l. *C. difficile* was not isolated from any other patient.

C. difficile resident in the small intestine may act as a reservoir for recolonisation of the large bowel in the phases immediately after treatment with the concomitant toxin production and symptomatic relapse that is increasingly noted with pseudomembranous colitis. To answer questions posed by the finding of *C. difficile* in the upper small bowel and to increase our understanding of the pathogenesis of *C. difficile*-mediated disease, we suggest that small-bowel specimens should be cultured for this organism whenever the opportunity is presented.

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¹ Larson HE, Price AB, Honour P, Borriello SP. *Clostridium difficile* and the aetiology of pseudomembranous colitis. *Lancet* 1978;ii:1063-6.

² Borriello SP, Larson HE. Antibiotic and pseudomembranous colitis. *Antimicrob Agents Chemother* 1981;7, suppl A: 53-62.

³ Borriello SP. *Clostridium difficile* and its toxin in the gastrointestinal tract in health and disease. *Research and Clinical Forums* 1979;1:33-5.

⁴ Taylor RH, Waterman S. "One swallow" test for the investigation of malabsorption and diarrhoea. *Gut* 1977;18:A425.

⁵ Borriello SP, Hudson MJ, Hill MJ. Investigation of the gastrointestinal bacterial flora. *Clin Gastroenterol* 1978;7:329-49.

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Correction

Aquagenic pruritus

An error occurred in this paper by Dr M W Greaves and others (20 June, p 2009). In the section headed "Morphological studies" the sentence starting on line 10 of the second paragraph should have read: "The percentage degranulation was not significantly increased after challenge ($t=1.91$; $0.1 > p > 0.05$; $df=2$; paired t test)."