

General practitioners naturally weigh all these points when deciding whether to seek bacteriological aid. A comprehensive study on survival and overgrowth of pathogens in different transport situations would seem to be long overdue.

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# Plasma CEA concentrations in pancreatic disease

SIR,—Dr L K Ashman and his colleagues in their paper on carcinoembryonal antigen (CEA) assay in the diagnosis of cancer (28 June, p 721) draw attention to the fact that cancer-free hospital patients may be better suited for reference material than healthy young adults. To our knowledge it has not also been pointed out that sampling for plasma CEA assay should be restricted to fasting patients if basal levels are sought.

As shown, for example, by Barton *et al*<sup>1</sup> and Goebell,<sup>2</sup> elevated serum levels of pancreatic lipase and amylase may be found after the administration of secretin and cholecystokinin (pancreozymin) to patients with pancreatic disease. We thought that a similar provocation test might be used to increase the sensitivity of the CEA test for pancreatic disease. Secretin and cholecystokinin (1 U/kg body weight of each peptide, obtained from the Karolinska Institute, Stockholm) were given intravenously and plasma CEA concentrations were determined in duplicate with the Roche kit.

Eight patients with pancreatic carcinoma, 10 with chronic pancreatitis, and six with other diseases (non-tropical sprue, Christian-Weber disease, cholelithiasis, liver disease, and non-specific diarrhoea) were studied. A varying but significant increase in plasma CEA concentration was noted after secretin and cholecystokinin administration in six patients with pancreatic carcinoma with slightly or moderately elevated basal CEA concentrations; of two patients with high basal levels, one did not respond (see figure). Similar results were noted in the patients with chronic pancreatitis, the single patient

with a high basal CEA concentration showing no response, while all but one of the remaining nine showed a varying but significant increase. No change or only a slight increase was noted in the patients with other diseases.

It may be concluded that it is possible to increase the plasma CEA concentration in patients with pancreatic disease by stimulation with secretin and cholecystokinin. Whether this is also possible in patients with other disorders is at present being studied. The provocation test may possibly increase the clinical value of the CEA assay. We have not systematically studied the effect of food intake, but preliminary data indicate that variations occur after a meal, possibly as a result of the release of gastrointestinal hormones.

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- 1 Burton, P, *et al*, *Gut*, 1960, 1, 125.
- 2 Goebell, H, *Internist*, 1970, 11, 117.

# Respiratory function in rheumatoid arthritis

SIR,—Dr P J Whorwell and his colleagues (26 April, p 175) report significantly reduced values of diffusing capacity for carbon monoxide (DCCo) in patients with rheumatoid arthritis as compared with the predicted values and the control group. The decreased DCCo correlated significantly only with smoking and the Waaler-Rose and latex scores in women.

Almost simultaneously we performed lung function tests (data completed by the end of 1974) on 62 patients (55 women, 7 men) with "classical" or "definite" rheumatoid arthritis. Persons with heart disease or anaemia or dust exposure were excluded. Lung function tests consisted of spirometry, plethysmography, blood gas analysis, and measurement of DCCo and lung compliance. Our own lung function data differed negligibly from the results obtained by other authors<sup>1-5</sup> (see table). The various parameters were then correlated with age, duration and stage of disease, rheumatoid factor titres, and therapeutic data (gold, steroids). A statistic-

Author	Percentage of patients within abnormal range		
	CO diffusing capacity	Lung compliance	Vital capacity
Davidson <i>et al</i> <sup>1</sup>	24	—	—
Frank <i>et al</i> <sup>2</sup>	41.4	—	—
Huang and Lyons <sup>3</sup>	57.1	—	27.2
Laitinen <i>et al</i> <sup>4</sup>	30	20	20
Morere <i>et al</i> <sup>5</sup>	55.4	40.5	—
Present findings	47.4	38.4	29

ally significant correlation was found between DCCo and the presence of rheumatoid factor and its titre. An abnormal DCCo ( $<1.34$  mmol min<sup>-1</sup> kPa<sup>-1</sup>) occurred more frequently in the group of seropositive patients than in the seronegative patients ( $P<0.05$ ). Furthermore, when ranking the patients into groups with increasing Waaler-Rose titre a linear relationship ( $P<0.01$ ) was found to exist between the titre and the percentage of patients with abnormal DCCo within the groups.<sup>6</sup> In addition, seropositive patients

frequently showed a decrease in lung compliance; these changes, however, were less than those in diffusion capacity.

The pathogenesis of the decreased DCCo in seropositive rheumatoid arthritis patients may be explained by immune-complex deposits at the site of blood vessels and by necrotic changes that can be demonstrated in lung specimens of seropositive patients only.<sup>7</sup>

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- 1 Davidson, C, Brooks, A G F, and Bacon, P A, *Annals of the Rheumatic Diseases*, 1974, 33, 293.
- 2 Frank, S T, *et al*, *Chest*, 1973, 63, 27.
- 3 Huang, C T, and Lyons, H A, *American Review of Respiratory Diseases*, 1966, 93, 865.
- 4 Laitinen, O, Salorinne, Y, and Poppius, H, *Annals of the Rheumatic Diseases*, 1973, 32, 531.
- 5 Morere, P, Stain, J P, and Nouvet, G, *Poumon et Coeur*, 1973, 29, 335.
- 6 Kolarz, G, *et al*, *Scandinavian Journal of Rheumatology*, 1975, suppl 8, abstr. 066.
- 7 Fassbender, H G, *Pathology of Rheumatic Diseases*. Berlin, Springer, 1975.

# Disaster wound treatment

SIR,—The most interesting letter from Professor Philip Rhodes on cyclone Tracy (16 August, p 419) should lead all interested in disasters and the management of mass casualties to study the relevant articles in the *Medical Journal of Australia* of 24 May 1975 (pp 641-650). The magnificent handling of the Darwin disaster in dreadful conditions reveals once more the tendency to forget certain previously learnt lessons and especially the necessity of managing wounds by delayed primary suture in disasters with large numbers of wounded.

Gurd *et al*<sup>1</sup> state that a policy of wound toilet and primary suture of skin was adopted and give as one reason that "most wounds were clean-cut lacerations less than 12 hours old." It is known that contaminated wounds become infected in six hours. They go on to mention that "during the next few days some patients were seen with infected wounds" and that one patient "presented on the fourth day with tetanus." O'Shea<sup>2</sup> states that among the illnesses seen on the third day were "continuing infections of wounds," while Degotardi and Grant<sup>3</sup> mention "at least one suspected gas gangrene patient" and "another possible gas gangrene patient" and state that "the injuries were similar to those of war casualties and the treatment in such circumstances should be along established military surgical principles." Scott-Findlay<sup>3</sup> includes among his recommendations that "the delayed primary closure of wounds should be undertaken always in a disaster similar to this, in which there are large numbers of injuries."

The medical histories of wars and disasters show that lessons previously learnt are too easily forgotten, and in particular the importance of practising delayed primary suture of wounds and of avoiding the evacuation of casualties with wounds sutured primarily. Tetanus and gas gangrene are highly preventable by correct wound care, thorough debridement, and delayed primary suture. While in no way detracting from the splendid work done in this dreadful Darwin disaster, there are lessons to be learnt in wound care as a result of it. In this day and age no

