

In this study, a partial response to carboplatin was observed in 1 patient (9%) with minor responses in 2 others; they all had stage IV disease with metastases to distant lymph nodes, liver or bone. These results indicate modest activity in advanced oesophageal cancer similar to that of the parent compound cisplatin, where response rates of 15-22% have been reported.^{4,5} However, carboplatin was well tolerated, no patients suffered renal toxicity and only 1 patient had transient myelosuppression. Response to the drug was associated with increased survival but the number of patients in this study is too small to draw definite conclusions about the results obtained.

At this time, use of carboplatin is limited by its expense. When this agent becomes freely available, further trials of carboplatin in advanced oesophageal cancer are indicated. Carboplatin may have a role as a less toxic substitute for cisplatin in combination chemotherapy regimens and as a radiosensitiser.⁶

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Detection of bacterial antigens in cerebrospinal fluid by a latex agglutination test in 'septic unknown' meningitis and serogroup B meningococcal meningitis

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Summary

The latex agglutination test (Wellcogen) was evaluated specifically in cases of 'septic unknown' meningitis, with CSF findings characteristic of bacterial meningitis but with no bacterial organisms grown on CSF culture or seen on microscopy after Gram staining. In only 4 (12%) of 33 cases of 'septic unknown' meningitis were antigens identified in the CSF. This kit contains for the first time reagents for the detection of serogroup B *Neisseria meningitidis* antigens and was also evaluated for this bacteria. Only 6 (27%) of 22 serogroup B *N. meningitidis* cases were identified.

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A considerable diagnostic dilemma is created by cases of meningitis presenting with CSF findings characteristic of bacterial meningitis, but with negative CSF culture and Gram staining. As many as 29% of bacterial meningitis cases may fall

into this group.¹ Latex agglutination tests can detect bacterial antigens in CSF in 60 - 90% of cases with a positive bacterial culture and their sensitivity in detecting bacterial antigens in the CSF has been reported to be very similar to that of Gram staining.^{2,3}

The Wellcogen latex agglutination test was evaluated as a diagnostic aid in cases of 'septic unknown' meningitis. This kit also contains, for the first, time reagents for the detection of serogroup B *Neisseria meningitidis*, a particularly welcome development in the western Cape Province where this bacterium is the commonest cause of meningococcal meningitis.⁴

Patients and methods

CSF from 117 patients with meningitis was evaluated during the period March 1987 - July 1988. The Wellcogen Bacterial Antigen Kit (Wellcome Diagnostics, Dartford, England) was used and the manufacturer's instructions followed. This kit contains reagents for the detection of group B β -haemolytic *Streptococcus*, *Haemophilus influenzae* type b, *Streptococcus pneumoniae*, *N. meningitidis* serogroups A, B, C, Y and W135 and *Escherichia coli* antigens. Patients were diagnosed as having 'septic unknown' meningitis when no bacterial organisms were grown on culture of blood or CSF and microscopy following Gram staining of CSF revealed no organisms, but $> 500 \times 10^6/1$ polymorphonuclear leucocytes (PMN) were seen, the CSF protein was > 1.2 g/l and/or the CSF glucose < 1.5 mmol/l. Similarly, 'possible septic unknown' meningitis

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patients were those with $> 500 \times 10^6/1$ PMN visible in the CSF, but with CSF protein < 1.2 g/l and CSF glucose > 1.5 mmol/l. CSF from all cases of proven *N. meningitidis* meningitis was evaluated irrespective of the CSF findings.

Results

The results are summarised in Table I. In only 4 (12%) of 33 patients with 'septic unknown' meningitis were bacterial antigens detected in the CSF. Six (27%) of 22 serogroup B *N. meningitidis* cases were identified.

TABLE I. EVALUATION OF THE WELCOGEN LATEX AGGLUTINATION TEST IN THE DETECTION OF BACTERIAL ANTIGENS IN CSF

	Positive	Negative
<i>N. meningitidis</i>		
Serogroup A	1	4
Serogroup B	6	16
Serogroup C	3	1
Serogroup W135	1	—
Non-typed	—	2
Gram-negative intracellular diplococci	—	4
'Septic unknown'	4	24
	(<i>H. influenzae</i> type b \times 1, <i>S. pneumoniae</i> \times 1, group B <i>Streptococcus</i> \times 2)	
'Possible septic unknown'		5
Aseptic meningitis	—	19
Viral meningitis	—	2
Tuberculous meningitis	—	9
Kit used in 16 cases with positive CSF culture		
<i>H. influenzae</i>	5	1
<i>S. pneumoniae</i>	2	1
Group B β -haemolytic <i>Streptococcus</i>	4	—
<i>E. coli</i>	—	1
<i>Candida albicans</i>	—	2
Total	26	91

Discussion

The Wellcogen Bacterial Antigen Kit was of help in only a relatively small number of 'septic unknown' meningitis patients. This is a problem area where the clinician is in need of assistance. We detected antigens in only 12% of culture-negative CSF samples where Leinonen and Käyhty⁵ reported 30% in their study also using latex agglutination. Colding and Lind⁶ reported the detection of antigens in CSF by counter-immuno-electrophoresis in 12% of culture-negative cases.

The poor immunogenicity of *N. meningitidis* serogroup B antigens is again shown by our results. Only 27% of cases were detected by the Wellcogen kit. There were no false-positive results in our tuberculous, viral and aseptic meningitis cases. Coovadia and Naidu⁷ reported 19% false-positive results with Bactigen and 6% with Phadebact latex agglutination tests. *H. influenzae* type b antigens appear relatively easy to detect by latex agglutination and *H. influenzae* antigens were detected in 83% of the culture-positive CSF specimens evaluated as well as in 1 'septic unknown' CSF.

The Wellcogen latex agglutination kit will thus aid the clinician but in only a small number of 'septic unknown' cases. The decision to implement the test will thus probably rest upon financial considerations in most laboratories. At present (July 1989) the cost of a kit with sufficient reagents for 25 tests is R490.

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