incubation for 42 hours at 43°C. Campylobacters were identified by cultural and Gram stain morphology.

Three hundred and twenty one samples were cultured. Nineteen (5.9%) yielded campylobacters on one or both media (a further three isolations were made after enrichment when neither medium directly yielded campylobacters). Campylobacters were isolated more frequently on modified CCDA than Skirrow's medium (table). On four occasions when growth occurred on both media a heavier growth was observed on modified CCDA than on Skirrow's medium, on two occasions the reverse was true, and on nine occasions the two media yielded equal growths (on one occasion the relative growth was not recorded.)

The modified CCDA greatly reduced the number of contaminating organisms grown, 68.4% of campylobacter positive CCDA plates showed a pure growth, compared with only 25% of the campylobacter positive Skirrow's media; 71.8% of the campylobacter negative CCDA plates showed no growth compared with only 33.4% of the campylobacter negative Skirrow's plates. Some coliforms grew quite well on modified CCDA. Yeasts grew equally well on both media. In two instances where campylobacters grew on modified CCDA but were not recognised on Skirrow's medium there was an overgrowth of Proteus sp on Skirrow's medium.

This study confirms that modified CCDA is superior to Skirrow's medium in isolating “thermophlic” campylobacters from human faeces and that it is far more selective in suppressing faecal flora. These findings are in complete agreement with those of Bolton and Hutchinson. The blood free medium is also cheaper. Costs were calculated as 15·3p a plate for Skirrow's medium and 13·5p a plate for modified CCDA. We intend to use the blood free medium from now on.

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References


Specificity problem of polyclonal rabbit antibody

We read with interest the report of the problem of antibody specificity in the immunohistochemical staining which was applied to the specimen from a patient with acquired immune deficiency syndrome.1 We agree with the conclusion.

We recently encountered a similar problem of antisera contamination with undesirable antibodies. Some polyclonal antisera raised in a rabbit seemed to contain anti-intermediate filament antibody, including anti-keratin antibody. Antisera to lysozyme, myoglobin, S-100 protein, a-lactalbumin, lactoferrin, and normal rabbit serum (all from Dako, USA) stained strongly the epidermis, and moderately the vascular endothelial cells (figure), fibroblasts, sweat glands, and arrector pili muscles of human skin. After absorption with the stratum corneum of a human sole the false positive reaction disappeared while the staining reaction of the positive control specimen remained unchanged. This suggested the contamination of anti-intermediate filament antibody in rabbit antisera or the presence of common antigenic sites of the reactants against intermediate filaments.2

It is important to know if contamination is present, or if a cross reaction has occurred in surgical pathology. A tumour which resembled a sarcoma showed a positive staining with anti-myoglobin antibody. The tumour was diagnosed as a poorly differentiated transitional cell carcinoma under electron microscopy. The specificity of antibody should thus always be investigated before use, especially when polyclonal antisera are used, due to possible contamination with anti-intermediate filament antibody. The optimal method to purify such contaminated antibody is that of absorption.3 Most clinical histopathology laboratories, however, cannot do such a special immunological procedure.4 We applied the simple absorption method for naturally occurring anti-intermediate filament antibody present in rabbit serum using the stratum corneum of human skin.

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References

1 Millard PR, Chaplin AJ, Heryet AR, McDougall AC. Factor VIII related antigen positive macrophages and acquired immune

Zinc supplementation and erythropoiesis in the elderly

Our previously reported group of geriatric patients with senile purpura, who proved to have low plasma zinc concentrations,1 did not have obvious related haematological abnormalities. The haemoglobin concentrations, however, did lie at the lower end of the normal range established for normal younger adults. As falls in haemoglobin related to age have been found in several studies, including those reporting on healthy subjects where no underlying cause was found,2 we undertook a pilot study of serum zinc, erythropoietin, and androgen concentrations in addition to full blood counts in 10 men and 10 women aged between 65 and 95 years. They were attending a day hospital for social reasons and had no physical or biochemical evidence or disorders known to influence erythropoiesis. Serum erythropoiesis was measured using a modification of the fetal mouse liver cell bioassay.3 Zinc concentrations were obtained by atomic absorption spectrophotometry, and testosterone by radioimmunoassay.

The red blood cell counts and the haematocrit values following zinc supplementation were significantly improved for men (p < 0.025) but not for women (p < 0.80 and p < 0.60, respectively). The other results are given in the table. The haemoglobin concentrations in women were in the lower half of the normal range, but those for men were significantly decreased as a group compared with the normal range. Three women and one man had high erythropoiesis values. This suggests that a decrease in erythropoiesis had been recognised by the body as a pathological process, and an attempt to correct this the kidneys were stimulated to produce higher levels of erythropoiesis. Despite increased production of this hormone the haematological indices had not been completely corrected.

Reported declining concentrations of androgens in both men and women4 suggest that the relative lack of testosterone, and particularly its biologically active metabolites, may be responsible for decreasing erythropoiesis in the elderly. Lowered androgen concentrations may be decreasing the number of committed stem cells available to develop along the erythroid line, thus making the marrow relatively insensitive to increased erythropoiesis concentrations. In addition, the concentration of erythropoietin induced when androgen concentration is lowered may not compensate the degree of disturbance in red cell production.

Studies have shown that whole body zinc concentrations decrease with age.5 Our correlation between zinc and testosterone values suggest that zinc may possibly be exerting an effect on erythropoiesis via androgen metabolism.

The results seen in this small pilot study of elderly subjects after three months of oral zinc supplementation are compatible with the hypothesis that there is a true anaemia of old age which may be related to lowered androgens, which in turn may be due to a lack of zinc. Clearly, investigations of larger numbers of aged subjects, particularly the concentrations of bound and free testosterone, as well as the effect of its biologically active metabolites at the various levels of the erythron pathway, may yield a clearer picture of the underlying pathological process.

References


Table Haematological and biochemical results for elderly subjects before and after three months of oral zinc supplementation

<table>
<thead>
<tr>
<th></th>
<th>Before Mean</th>
<th>95% CI of Mean</th>
<th>Range</th>
<th>After Mean</th>
<th>95% CI of Mean</th>
<th>Range</th>
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<tr>
<td>Hb (g/dl)</td>
<td>F 12.5</td>
<td>0.5</td>
<td>11.4–13.7</td>
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<td>M 13.5</td>
<td>1.22</td>
<td>11.1–15.5</td>
<td>M 13.8</td>
<td>1.12</td>
<td>11.4–15.5</td>
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<td>Erythropoiesis (mIU/ml)</td>
<td>F 80.8</td>
<td>26.6</td>
<td>25–169</td>
<td>F 63.2</td>
<td>15.16</td>
<td>36–115</td>
<td>0.041</td>
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<td>M 69.0</td>
<td>20.6</td>
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<td>M 70</td>
<td>16.2</td>
<td>32–99</td>
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<td>Testosterone (nmol/l)</td>
<td>F 1.3</td>
<td>0.3</td>
<td>0.6–2.0</td>
<td>F 1.5</td>
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<td>M 10.6</td>
<td>4.06</td>
<td>7–16.0</td>
<td>M 14.1</td>
<td>5.22</td>
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<td>Zinc (umol/l)</td>
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<td>0.74</td>
<td>9.9–12.9</td>
<td>F 16.4</td>
<td>4.2</td>
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<td>9.9–14.7</td>
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<td>10–21.7</td>
<td>0.017</td>
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</table>
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M Kobayashi, E Yanagihara and T Hayashi

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