only in classes I/II (P < 0.05). The results for men and women using the sum of skinfold thicknesses as the measure of obesity (figure b, d) were much the same as those using W/H. Obesity index (W/H) and skinfold thickness increase with age, but multiple regression analysis did not suggest that any of the findings were due to differences in the age composition of the various social class/smoking habit groups.

Comment

Our data possibly explain why previous reports on smoking and obesity in men are conflicting. Probably the association is strongly dependent on social class, with a positive relationship between smoking and obesity in classes I/II and a negative one in classes IV/V. The results are not due to differences by social class in amounts smoked since the daily numbers of cigarettes or tobacco equivalents smoked by men in classes I/II, III, and IV/V were 16-4, 16-2, and 16-5 respectively. Differences in availability of cigarettes and in attitudes to smoking could partly account for our findings. People in classes I/II probably can afford both to smoke and eat more than they need, while those in classes IV/V may have to spend less on food if they smoke. Possibly also the fewer smokers in classes I/II reflect a greater response to health warnings in the upper than lower classes, and that those in classes I/II who have ignored warnings about smoking have also ignored the health dangers of obesity.

We found no social class crossover effect in women. Non-smokers were more obese than smokers in all three social classes. There may be differences in availability of cigarettes and attitudes to smoking between men and women that account for the contrast. Whatever the reasons for social class differences in the relationship between smoking and obesity, particularly in men, it is important to recognise that they may exist.

Thyroglobulin concentration in neonatal blood: a possible test for neonatal hypothyroidism

Thyroglobulin (Tg) is secreted in small amounts by the thyroid gland and is measurable in the serum of most if not all adults.1 Assay of serum Tg has been advocated as a marker for thyroid cancer.2 We suggest a possible use in screening for neonatal hypothyroidism. To test this hypothesis, it is necessary first to determine the range of serum Tg concentrations found in normal newborn infants. We present the results of assays for Tg carried out in normal neonates and compare them with those in normal adults. We include data on 12 hypothyroid subjects and replacement thyroxine (T4) and on 10 suspected hypothyroid children.

Materials, methods, and results

Human Tg was prepared from surgically removed normal thyroid tissue after separation by ultracentrifugation at 100 000 × g at 0°C, column chromatography on Sephadex G200 and Sepharose 4B, and preparative polyacrylamide gel electrophoresis. Immunochromatographic purity was demonstrated. The preparation yielded 195 and 275 Tg; the former was more abundant and was used to raise antisera in rabbits. Radioimmunoassay was established following Van Herle3 with minor modifications.

Serum Tg concentration in different groups of subjects was:

(1) 60 normal non-goitrous adults 15-65 years old: range 6-5-43 μg/l (mean ± SEM 18-3±1-1); values in women were slightly higher than in men.

(2) Six totally thyroidectomised adults and six athyrotic cretins, all taking adequate replacement of T4, in all 12 subjects serum Tg was below the limit of detection of the assay (5 μg/l).

(3) 191 neonatal cord bloods: range 10-130 μg/l (mean ± SEM 57±1-71). These values were significantly higher than adult concentrations (P < 0.0001).

Only four of the 191 samples gave values below 20 μg/l.

(4) 39 matched maternal serum and cord serum: in every case cord blood Tg was higher than maternal.

(5) Six infants (3 days to 12 months old) and four children (5-9 years old) with suspected hypothyroidism; none was on thyroid hormone treatment at the time. Results are shown in the table.

Discussion

The results of our study confirm the observation4 that neonatal serum Tg concentrations are higher than adult. This argues against appreciable placental transfer of Tg and suggests that neonatal serum Tg is derived from the infantile thyroid gland, perhaps because of the increased neonatal thyroid stimulating hormone (TSH) drive. In 12 hypothyroid subjects, six adult and six infantile cretins maintained on T4, serum Tg was immeasurably low. If a “suppressed” thyroid gland secretes little or no Tg, it seems reasonable to assume that an absent or appreciably underdeveloped gland might show a similar
abnormality. The table shows that all subjects had raised serum TSH and low T4 concentrations. Cases 1-5 had measurable or low serum Tg values compatible with depressed or absent thyroid function. Cases 6-10 had normal or high Tg values, but in each case serum T3 concentration was normal (in one case, high). This implies the presence of functioning thyroid tissue and raises a query about the nature and degree of their hypothyroidism.

Results in children with suspected hypothyroidism

<table>
<thead>
<tr>
<th>Case No</th>
<th>Serum T4 (nmol/l)</th>
<th>Serum T3 (nmol/l)</th>
<th>TSH (mU/l)</th>
<th>Tg (µg/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.2</td>
<td>1.7</td>
<td>250</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>1.6</td>
<td>1.5</td>
<td>75</td>
<td>Undetectable</td>
</tr>
<tr>
<td>3</td>
<td>1.4</td>
<td>&lt;10</td>
<td>140</td>
<td>Undetectable</td>
</tr>
<tr>
<td>4</td>
<td>0.8</td>
<td>3.2</td>
<td>150</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>3.4</td>
<td>&gt;40</td>
<td>290</td>
<td>Undetectable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case No</th>
<th>Serum T4 (nmol/l)</th>
<th>Serum T3 (nmol/l)</th>
<th>TSH (mU/l)</th>
<th>Tg (µg/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>1.0</td>
<td>1.5</td>
<td>75</td>
<td>Undetectable</td>
</tr>
<tr>
<td>7</td>
<td>1.4</td>
<td>1.5</td>
<td>10</td>
<td>150</td>
</tr>
<tr>
<td>8</td>
<td>1.8</td>
<td>3.2</td>
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</tr>
<tr>
<td>9</td>
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</tr>
<tr>
<td>10</td>
<td>2.2</td>
<td>&gt;40</td>
<td>150</td>
<td>10</td>
</tr>
</tbody>
</table>

Normal range: 60-150 nmol/l 1.6-3.4 nmol/l <5 0-10 ng/ml

*Two separate samples on same child. Sera kindly supplied by Dr R Illig, Kinderspital, Zurich, and Dr D B Grant, Hospital for Sick Children, Great Ormond Street, London.

Conversion: SI to traditional units—T4: 1 nmol/l = 0.078 µg/100 ml. T3: 1 nmol/l = 0.65 ng/ml.

Thyroxine is usually given promptly when hypothyroidism is suspected in the hope of preventing mental deterioration. We do not question the correctness of this approach, but in view of our demonstration of functioning thyroid tissue in five out of 10 suspect patients, we wish to emphasise the need for later full re-evaluation of the diagnosis. Serum thyroglobulin assay appears to provide a useful and reliable indication of overall thyroid secretory capacity.


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Acute poisoning with Distalgesic

Although the dangers of dextropropoxyphene have been emphasised, it is still widely prescribed, particularly in preparations such as Distalgesic in which it is combined with paracetamol. We report a case of acute poisoning with this preparation.

Case report

A 15-year-old girl, apparently well a few minutes previously, was found on the floor unconscious and cyanosed. A friend with first-aid knowledge had found her pulseless and apnoeic and, after a blow on the chest, began mouth-to-mouth artificial respiration, which produced a palpable radial pulse and spontaneous respiratory efforts. The girl was taken within 20 minutes to hospital. During the journey she had convulsive movements. On arrival these stopped and she had a cardiorespiratory arrest. Full resuscitative measures were instituted, including endotracheal intubation and intermittent positive-pressure ventilation, intravenous sodium bicarbonate, electrical defibrillation, and, when an ECG showed asystole, intravenous adrenaline. After resuscitation the ECG showed sinus rhythm but her blood pressure was unrecordable. She remained deeply unconscious with fixed, dilated pupils and areflexia. She made only minimal respiratory gasping efforts, so intermittent positive-pressure ventilation was continued. When transferred to the intensive therapy unit she did not improve, despite adequate ventilation of both lungs. Chest x-ray examination was normal. Urinary catheterisation showed virtual anuria over the next three hours, and her central venous pressure was 30 cm H₂O (2.94 kPa). The ECG at this stage (figure) showed first-degree heart block, complete right bundle-branch block, and extreme axis deviation.


Four hours after initial presentation the patient’s mother reported that about 50 tablets of Distalgesic were missing. Naloxone 1-2 mg intravenously produced an immediate increase in respiratory efforts (although insufficient to allow withdrawal of artificial ventilation) and a palpable pulse associated with a rise in blood pressure to 90/50 mm Hg. The central venous pressure dropped to 11 cm H₂O (1.0 kPa). Within an hour 200 ml urine was voided. The ECG returned virtually to normal within three hours (figure) and was completely normal the next day. Although naloxone 0.8 mg was continued subcutaneously every four hours, intermittent positive-pressure ventilation was required for 20 hours. She remained unconscious for 70 hours. Her plasma paracetamol concentration four hours after admission was 2300 µmol/l (345 mg/l). A subsequent calculated plasma paracetamol half life of eight hours indicated a high risk of liver damage. Cysteamine was given intravenously and liver function tests were monitored over the next 10 days. There was a slight rise in serum alanine transaminase (serum ALT; GPT) concentration, but this later returned to normal. She was discharged home physically normal after 10 days.

Comment

The clinical features were typical of acute poisoning with dextropropoxyphene, although the cardiovascular depression (with pronounced electrocardiographic changes) was greater than usual. The dramatic improvement after naloxone suggests a direct toxic effect of dextropropoxyphene. Without such an effective antidote such a case might almost have died. Probably cysteamine treatment prevented severe liver damage secondary to poisoning with paracetamol. Although naloxone is known as an effective antagonist of the respiratory depression caused by dextropropoxyphene,3 this case shows that it can also antagonise the cardiac toxicity. The continuing popularity of preparations containing dextropropoxyphene is difficult to understand. There are many simpler, cheaper, and potentially less toxic preparations with probably greater therapeutic value.4


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