as high a concentration as this spontaneously. Nevertheless, there was no indication of increased aggression, though she was very dramatically virilised.

A wide range of ovarian tumours can secrete androgens. Though virilisation is often severe, serum testosterone concentrations are usually increased only up to the normal male range at the most. After resection of the tumour she showed a dramatic response that greatly exceeded everyone’s expectations.

The diagnosis was delayed principally because the wrong test was carried out. This case shows that measurements of serum testosterone and androstenedione concentrations, perhaps with dehydroepiandrosterone sulphate, are very much better at excluding virilising tumours than urinary 17 ketosteroid excretion, which correlates poorly with serum androgen concentrations. Ketosteroid excretion generally represents the weaker adrenal androgens, though her testosterone concentration was 11 years previously was probably much lower than it was at the time of diagnosis. It would doubtless already had been considerably increased at that time.


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Fall and rise of immunity to rubella

We report a study of the prevalence of rubella antibody in a sample of children and adolescents who attended the children’s department at Leeds General Infirmary. The purposes of this study were to determine whether the age at which antibody is acquired has changed since the introduction of rubella vaccination in 1970 and to use the results as an aid in interpreting the importance of rubella antibody in young children suspected of having congenital rubella.

Patients, methods, and results

Blood was obtained from 245 children and adolescents who underwent venepuncture in the course of other investigations while attending the hospital between October 1985 and July 1986. All serum samples were tested for rubella antibodies by single radial haemolysis and haemagglutination inhibition tests using standard methods. In the microtitre haemagglutination inhibition test pigeon erythrocytes were used to indicate haemagglutination, and all serum samples were pretreated with kaolin. In all cases the presence or absence of antibody was confirmed by both the haemagglutination inhibition test and single radial haemolysis. No gross discrepancies were detected between the results of the two tests.

Comparison of proportions of children with rubella antibodies in 1985-6 and 1969 by age. Values expressed as number of children with antibody/number of children tested (and percentage)

<table>
<thead>
<tr>
<th>Age</th>
<th>1-3 months</th>
<th>4-6 months</th>
<th>7-11 months</th>
<th>1-2 years</th>
<th>3-5 years</th>
<th>6-12 years</th>
<th>13-20 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-6</td>
<td>10/12 (83)</td>
<td>2/3 (67)</td>
<td>0/1 (0)</td>
<td>2/4 (50)</td>
<td>0/2 (0)</td>
<td>2/4 (50)</td>
<td>0/3 (0)</td>
</tr>
<tr>
<td>1969*</td>
<td>14/19 (74)</td>
<td>3/8 (38)</td>
<td>1/17 (6)</td>
<td>4/17 (24)</td>
<td>0/10 (0)</td>
<td>2/10 (20)</td>
<td>0/3 (0)</td>
</tr>
</tbody>
</table>

* Figures from Brown et al.

The table shows the distribution of rubella antibodies in the different age groups. For comparison the distribution of antibodies shown by haemagglutination inhibition in a similar study performed in Leeds in 1969 is included.

Further analysis of the results showed that though only 11% (11) of nine children aged 5 years had acquired antibody, seven (64%) of 11 children aged 5 years were seropositive.

Comment

These findings show that passively acquired maternal antibody is usually lost by the age of 7 months and that it is rare to acquire active immunity under 2 years of age. Even in the group of children aged 3-5 years only 16% had evidence of having had rubella, and most children acquired antibody between 6 and 12 years of age. This pattern is similar to that found in 1969 and shows no evidence of having been influenced by the rubella vaccination programme. This is not surprising as the policy adopted in the United Kingdom in 1970 was a selective one aimed at protecting girls before childbearing age and not at interrupting transmission of the virus. Although it has resulted in a decreased proportion of susceptible women of childbearing age, a considerable number remain at risk of contracting rubella in pregnancy. To protect them it has been proposed that the present vaccination programme be augmented by immunising boys and girls in early childhood. Our findings indicate that if a high rate of uptake was achieved it would have a large impact on reducing the pool of infection and hence on preventing congenital rubella.

It is difficult to interpret the finding of rubella antibody in a child who presents with sensorineural deafness in the second or third year of life. The knowledge that only 4% of children in Leeds have acquired antibody by the age of 3 should help to clarify this difficulty.

We thank our consultant colleagues for allowing us to include their patients in the study.


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Eye injuries caused by directed jets of water from a fire hose

We report two cases of eye injuries caused by jets of water from a fire hose. Palpebral laceration and rupture of the orbital septum caused by sprinkler jets used in agricultural irrigation have been described, but to our knowledge severe intraocular injuries have not been reported.

Case reports

Two students were hit in the face by a jet of water from a fire hose at close range during their university’s “rag week.” The pump pressure was 10 bars (150 lb/in²), the diameter of the hose 45 mm, and the diameter of the hose nozzle 20 mm. The length of the hose was 75 m, and the jet was directed from less than 5 m.

CASE 1

A student presented to the eye department immediately after the accident with reduced vision in both eyes. The visual acuity was 6/36 in the right eye and there was perception of light in the left. Extensive lid ecchymosis and subconjunctival haemorrhages suggested bilateral retrobulbar haemorrhage. Extraocular movements were full, and there was no proptosis. Papillary reactions to light and accommodation were reduced in both eyes. Slit lamp examination of the left eye showed a 2 mm hyphaema; the pupil was dilated and the iris sphincter ruptured. The right eye showed dispersed blood in the anterior chamber with an oval pupil. The intraocular pressure in the left eye was raised at 26 mm Hg and in the right eye was normal at 18 mm Hg. The patient was admitted to hospital for bed rest and was treated with...