Correspondence

As an exception to our policy we are publishing the following long letter, which deals with a complicated topical issue.

Immunoprophylaxis of infants born to hepatitis B virus exposed mothers

Sir,

In recent correspondence Drs Ewing and Davidson suggest the limited supply of specific hepatitis B immunoglobulin as the only reason for the restriction of hepatitis B immunisation in infants in Britain to those whose mothers are negative for antibody to hepatitis e antigen (anti-HBe). The decision to limit hepatitis B immunisation to this group, in the first instance at least, was based, however, not only on the immunoglobulin supply but on risk, benefit, and cost assessments, of which only parts have been published. In view of the concern that may be aroused by the report of fulminant hepatitis B in an infant of an anti-HBe positive mother in Britain, a more detailed account of these assessments is given below.

The prevalence of anti-HBe positive and hepatitis B surface antigen (HBsAg) carriage in Britain

Estimates—based on country of birth and the rates of HBsAg carriage and anti-HBe positivity expected in various ethnic groups—suggest that in Britain about 2000 infants are born annually to carrier mothers, about four fifths of whom are anti-HBe positive: less than 400 of the carrier mothers are white but a larger portion of them, about nine tenths, are anti-HBe positive.

The risk of perinatal exposure to anti-HBe positive mothers

The number of virus particles per millilitre in the serum of anti-HBe positive carriers is small, so that most infants born to these mothers escape infection completely, but about 10% have transient symptomless infections with subsequent development of immunity.

Acute hepatitis did not occur as a problem in prospective studies, but there have been a few published reports, including one from Britain, of severe hepatitis B in the first months of life in infants of carrier mothers, some of whom were anti-HBe positive. The reports cannot indicate, however, the incidence of the illness. A rough assessment of incidence in Britain can be made on the basis of routinely collected data—that is, statutory notifications, death certificates, and Public Health Laboratory Service (PHLS) Communicable Disease Reports.

Notifications of infective jaundice

Notifications do not give a complete account of the incidence of clinical infections but they are reliable indicators of trends. Annual fluctuations in notifications of infective jaundice are known to depend upon the incidence of type A infection rather than type B, which tends to remain at a low, fairly constant level. There are few notifications of infective jaundice for infants of less than a year and the trend in the period 1968–81 corresponds well with that of all notifications, suggesting that when acute hepatitis occurs in infants it is usually type A (Table 1).

Death certificates

Office of Population Censuses and Surveys reports of deaths from viral hepatitis.

In the seven years 1975–81, 10 infants aged less than a year died of viral hepatitis: of the 10, six were 6 months old or less. The type of infection was not stated (this is not a requirement), but a negative HBsAg test was recorded for one of the six and another died at three weeks, earlier than a type B infection would be expected to manifest.

PHLS Communicable Disease Reports of acute hepatitis B

These reports of acute hepatitis B confirmed by laboratory tests seem to provide an estimate of incidence as reliable as that of a population study. In any event it is expected that an illness as uncommon in an infant as acute hepatitis would be investigated thoroughly, including serological tests, the results of which are expected to be reported to the communicable disease report routinely. During the seven years 1975–81, seven infants with HBsAg positive illnesses and one other infant positive for antibody to hepatitis surface antigen (anti-HBs) were reported. Five of the HBsAg positive and the one anti-HBs positive illnesses were in the first six months of life. None of the infants was reported to have died, and this was confirmed by inspection of the death certificates.

Table 1 Notifications infective jaundice

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>23580</td>
<td>21584</td>
<td>14142</td>
<td>12269</td>
<td>8073</td>
<td>7623</td>
<td>5756</td>
<td>5954</td>
<td>5123</td>
<td>4673</td>
<td>3216</td>
<td>5143</td>
<td>9634</td>
</tr>
<tr>
<td>Age &lt;1 year</td>
<td>26</td>
<td>21</td>
<td>18</td>
<td>10</td>
<td>13</td>
<td>16</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>4</td>
<td>7</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
Table 2 Approximate cost estimates for various options in hepatitis B prevention

<table>
<thead>
<tr>
<th>Option</th>
<th>Approximate annual cost (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selective screening of antenatal patients:</td>
<td></td>
</tr>
<tr>
<td>(i) Antibody to hepatitis B immunoglogin (Anti-HBiG) at birth plus hepatitis B vaccine for infants of `high risk' mothers: no immunisation for infants of anti-HBe positive mothers</td>
<td>46000</td>
</tr>
<tr>
<td>(ii) Anti-HBiG at birth plus hepatitis B vaccine for all infants of HBsAg positive mothers</td>
<td>151000</td>
</tr>
<tr>
<td>Screening of all antenatal patients:</td>
<td></td>
</tr>
<tr>
<td>(i) Anti-HBiG at birth plus hepatitis B vaccine for infants of `high risk' mothers: no immunisation for infants of anti-HBe positive mothers</td>
<td>120000</td>
</tr>
<tr>
<td>(ii) Anti-HBiG at birth plus hepatitis B vaccine for all infants of HBsAg positive mothers</td>
<td>246000</td>
</tr>
</tbody>
</table>

It is emphasised that these assessments apply to Britain only. Acute hepatitis B can be expected to be more common among young infants in populations with higher HBsAg carrier rates.

The mothers of the five HBsAg positive infants were reported to be HBsAg positive, but results of HBe antigen and antibody tests were not recorded.

According to these reports, in Britain each year less than one infant develops acute hepatitis B as a result of perinatal exposure. On this basis, it would be necessary to immunise more than 2000 neonates of anti-HBe positive mothers to prevent acute hepatitis B in one young infant. More recent Communicable Disease Reports confirm this assessment. Since the surveillance began in 1982 more than 5000 infants are estimated to have been born to anti-HBe positive carrier mothers in Britain: during this time there have been only two reports of acute hepatitis B in early infancy, including the infant who died.

Cost estimates of various options

A summary of estimates made in 1983 is given in Table 2. These do not include the cost of salaries of clinical and laboratory health service staff. A reduction in expense due to the recent introduction of paediatric doses of hepatitis B vaccine will have been offset by increases in other costs—for example, laboratory tests—since 1983.

References


Sheila Polakoff
Central Public Health Laboratory,
London NW9 5HT

Ethical aspects of neonatal care

Sir,

Dr Bissenden's annotation on 'Ethical aspects of neonatal care' is based on a series of (conceivably false) premises that render illogical his conclusion that each case should be treated 'without preconceived ideas'. All our decisions are influenced by some underlying moral reference points and for one would totally reject several of those on which Dr Bissenden's decisions are based. What is the evidence that life clearly does not begin at the fusion of the gametes? When does it begin? At 40? At what stage in infancy does one become a child thereby acquiring rights? The United Nations Declaration of the Rights of the Child of 1959 includes the phrase 'before as well as after birth'.

Has the author never observed the two way communication between parents and their severely handicapped child 'of mental age no more than 2'? To label as evil someone who supports the life of a severely handicapped child is to make a highly offensive value judgment, presumably based on Dr Bissenden's idiosyncratic definition of good and evil. At the same time the Catholic position is conveniently dismissed by simply avoiding it.

There is no doubt that we are facing many taxing ethical problems in neonatal practice. It would be most unfortunate if Dr Bissenden's philosophy was to be the basis for solving them.

R B McGucken,
Royal Albert Edward Infirmary,
Wigan WN1 2NN

Dr Bissenden comments:

The inevitable consequence of writing on a subject such as 'Ethical aspects of neonatal care' is that whatever one writes someone will strongly disagree. There is no reason to believe that doctors will have uniform moral reference points relevant to an issue, any more than teachers or lawyers will.

Dr McGucken asks difficult questions, provides no answers, and is very critical. His beliefs, however, are highly personal. They should be respected but are as irrelevant as mine. I do not have an absolute view on the subject, but what I tried to do in the annotation was to acknowledge that most neonatologists in the United Kingdom were, under certain circumstances, withdrawing intensive care from premature neonates. That being the case, when examining the logistics of decision making, and