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the prognosis of neonates has not improved during past decades, and 11 of 23 reported neonates died.\textsuperscript{1}

The findings in this case make it likely that the death of the fetus was caused by pneumococcal intrauterine infection. It is possible that the clinical course would have been different if the patient had not been treated with ritodrine and betamethasone. The latter drug might have facilitated the infection, and if no ritodrine had been given the patient might have delivered before fetal death occurred. However, because there were no signs of intrauterine infection and because the gestational age was only 27 weeks, we decided to delay delivery.

The clinical presentation of our patient suggests an ascending infection which is in agreement with data from the literature.\textsuperscript{1} Pneumococci do not survive well in the vagina because of the low pH but may grow when alkaline pH changes have occurred.\textsuperscript{7} Rupture of the membranes, as in our patient, may cause such alkaline changes and therefore support growth of pneumococci. Because our patient had been coughing before admission, a hematogenous route of transmission during a respiratory pneumococcal infection cannot be excluded, although the absence of fever does not support this possibility. Because \textit{S. pneumoniae} is a commensal of the upper respiratory tract, it has been suggested that pneumococcal infection of the female genital tract may be caused by oral-genital contact.\textsuperscript{2} Our patient did not participate in oral-vaginal sex and cultures of the throat of her husband were negative for pneumococci. In addition only 1 of the 36 women reported in the review of Westh et al.\textsuperscript{1} had oral-vaginal contact 6 weeks before the infection. An alternative route of infection might be via the gastrointestinal tract, although no data can be found in the literature to support this suggestion. Moreover, culture of the rectum of our patient did not show \textit{S. pneumoniae} carriage.

It is uncertain whether the fatal course of the present case was a result of penicillin resistance of the infecting strain. It is generally accepted that penicillin resistance is only of clinical significance in pneumococcal meningitis because of the unreliable concentrations of antibiotics in cerebrospinal fluid. The same might hold true for intrauterine infections. Furthermore our case is of importance because of the rare incidence of penicillin resistance in the Netherlands (less than 1%).\textsuperscript{8} A low concentration of pneumococcal IgG antibodies might be an immunologic risk factor for recurrent disease. Wright et al.\textsuperscript{5} described a woman who delivered premature infants affected by early onset pneumococcal sepsis in two successive pregnancies. This woman had low pneumococcal antibody titers and vaccination with 23-valent pneumococcal vaccine produced a rise in antibodies. Our patient appeared to have an adequate titer of anti-serotype 14 antibody 6 weeks after the infection, and her following pregnancy was uneventful.

In conclusion \textit{S. pneumoniae} is rarely found in the female genital tract but may cause intrauterine infection and fetal demise. Because resistance to penicillin does occur, higher doses of penicillin or a cephalosporin should be considered for optimal treatment of pneumococcal intrauterine infection.

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