We describe a 5-month-old preterm female infant who presented with necrotizing fasciitis involving the face and neck caused by group B streptococcus (GBS). Because of the extent and anatomic location of the necrosis, surgical debridement was delayed for 16 days, but the infant survived. Review of the literature demonstrated that 3 of the 10 previously reported cases of necrotizing fasciitis caused by GBS involved preterm infants and that 2 of these cases also involved the head and neck.

Necrotizing fasciitis is a severe infection involving the superficial fascia, subcutaneous tissue, and, occasionally, deeper tissue layers. It is usually treated with surgical debridement in combination with antibiotics [1]. We describe a 5-month-old preterm female infant who survived necrotizing fasciitis of the head and neck caused by group B streptococcus (GBS) despite a delay in surgical debridement.

Case presentation. At 142 days of age, a female Northern Canadian Aboriginal infant presented to the local nursing station with fever and irritability. The patient’s medical history included hospitalization until day 137 after birth because of prematurity (gestational age, 24 weeks; birth weight, 745 g). Initially, no abnormalities were noted on physical examination. Within 6 h after presentation, the infant was less responsive, and swelling and erythema of the left cheek was observed. The infant was airlifted to the regional hospital; further progression of the swelling and erythema was observed during the 2-h flight.

On arrival at the hospital, the swelling and erythema had expanded to involve the entire left cheek and extended posteriorly to the left occiput, the anterior neck bilaterally, and a and dopamine therapy was initiated. Her venous blood pH was 7.02, her hemoglobin concentration was 88 g/L, and other blood indices were as follows: WBC count, 1.8×10^9 cells/L, neutrophil count, 0.1×10^9 neutrophils/L, lymphocyte count, 1.7×10^9 lymphocytes/L, and platelet count, 245×10^9 platelets/L. The first antibiotic regimen (which included cefotaxime, clindamycin, clindamycin, and penicillin) was administered ~12 h after the onset of symptoms. A 3-h flight was arranged to the pediatric intensive care unit at Stollery Children’s Hospital (Edmonton, Alberta, Canada).

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component of the right cheek and right temporal-parietal scalp (figures 1 and 2). Tissue involvement was thought to be full thickness, because discoloration and swelling were noted on the left buccal mucosa. The patient was subsequently maintained on high ventilatory and vasopressor support (dopamine, epinephrine, and norepinephrine). Antibiotic treatment was continued with penicillin, clindamycin, and cefotaxime. Hydrocortisone (3 mg/kg/day) and a single dose of intravenous immunoglobulin (2 g/kg) were given within the first few hours after admission to the pediatric intensive care unit. At this time, the creatine kinase level was 8913 U/L, the C-reactive peptide level was 141 mg/L, the international normalized ratio was 2.7, the prothrombin time was 120 s, and the antithrombin-III level was 0.17 U/mL. The infant then received a dose of antithrombin-III and a transfusion of platelets and fresh-frozen plasma. GBS (serotype III) was isolated from culture of a blood sample, swabs of an open neck blister, and middle ear fluid aspirate (all obtained on arrival). The antibiotic regimen was subsequently changed to ampicillin and gentamicin. Debridement was not possible because of the extensive involvement of all tissue layers of the left lower face and of a large portion of the scalp and anterior neck. After 24 h of antibiotic treatment, the margins of erythema and swelling had receded slightly, and by day 7 after admission to the hospital, there was considerable improvement (figure 3) and the gentamicin therapy was discontinued. A CSF sample specimen obtained by lumbar puncture on day 5 was normal.

The patient was weaned off inotropic support by day 5 after admission and was extubated 10 days after admission. A bone scan did not identify osteomyelitis. Extensive surgical debridement was performed on day 15. The patient’s clinical condition continued to be stable, and the antibiotic regimen was discontinued 48 h after debridement. The findings of histologic examination of the tissue—extensive full-thickness necrosis, inflammatory exudate and areas of dead tissue from the ear—were consistent with necrotizing fasciitis.

On day 40 of her illness, the patient underwent debridement,
Although GBS disease is most commonly caused by serotype III (as in our patient), in 2 of the reported cases in infants of GBS necrotizing fascitis, the isolate was serotype Ib [5]. Six adults and 1 older child (10 years of age) have also been reported to have necrotizing fasciitis caused by GBS, and, interestingly, none of these cases involved the face [6, 10–13]. Common risk factors were diabetes [6, 10, 11] and trauma or surgery [6, 12, 13], and 1 case was associated with leukemia [6]. In our patient, there were no known risk factors for necrotizing fasciitis, such as varicella infection, skin trauma (there was no recent use of intravenous devices in the scalp), postoperative infections, or diabetes.

Because of the extent of our patient's necrotizing fasciitis, early debridement would have required removal of the entire lower face and part of the scalp down to the bone. The traditional conception is that successful treatment of necrotizing fasciitis requires early debridement. It is now clear, however, that some cases of severe necrotizing fasciitis caused by group A streptococcus can be cured by antibiotics alone, followed by late debridement [14]. Our case and 2 of the other cases of GBS necrotizing fasciitis were treated without early debridement [4, 10], which suggests that this may be an option for some patients.

In conclusion, necrotizing fasciitis caused by GBS in children occurs mainly in preterm infants and often involves the head and neck. Early debridement is not always required for cure.

### Table 1. Summary of infant cases of necrotizing fasciitis caused by group B streptococcus in the absence of other pathogens.

<table>
<thead>
<tr>
<th>Patient age</th>
<th>Gestational age, weeks</th>
<th>Location of fasciitis</th>
<th>Treatment</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 weeks</td>
<td>Not stated</td>
<td>Face</td>
<td>Debridement on day 21; penicillin</td>
<td>[4]</td>
</tr>
<tr>
<td>7 weeks</td>
<td>28</td>
<td>Thigh</td>
<td>Early debridement; penicillin</td>
<td>[5]</td>
</tr>
<tr>
<td>11 weeks</td>
<td>32</td>
<td>Face</td>
<td>Early debridement; penicillin gentamicin</td>
<td>[5]</td>
</tr>
<tr>
<td>5 months</td>
<td>24</td>
<td>Face</td>
<td>Debridement on day 15; ampicillin gentamicin</td>
<td>PR</td>
</tr>
</tbody>
</table>

**NOTE.** Adapted from Gardam et al. [6], with permission. PR, present report.

* Early debridement refers to debridement within 48 h after diagnosis.

References

5. Ramamurthy RS, Srinivasan G, Jacobs NM. Necrotizing fasciitis and