Peripheral Gangrene in a Newborn

Peripheral gangrene in the newborn, unassociated with dehydration, is rare. The condition was first described in 1828 by Martini (as quoted by Gross, 1945). Since then about 65 cases have been reported (Smith et al., 1965; Okojie, 1967; Vittoria, Cotrufo, and Spampinato, 1965; Gilbert et al., 1970).

Case Report

This infant is the fifth child of healthy, white parents. At 28 weeks' gestation the mother's membranes ruptured. A circumferential suture was placed in the cervix. Within 3 days a purulent vaginal discharge developed and the suture was removed. She immediately went into labour and the baby was born precipitately and by breech. When seen by the general practitioner, he found evidence of respiratory distress and gangrene, and hospital transfer was arranged.

On admission the patient was an ill, male, premature infant weighing 1.29 kg. He was cyanosed, breathing rapidly (90/min), with retraction of the chest wall, diminished breath sounds, and crepitations over both lung fields. The heart sounds were normal, no murmurs were heard and all peripheral pulses were palpable (including both posterior and anterior tibial arteries). There was complete gangrene of all the toes of the left foot (Fig. 1), but apart from oedema and cyanosis there was no abnormality of the other limbs.

A diagnosis was made of respiratory distress due to aspiration or congenital pneumonia, and peripheral gangrene of unknown origin. Treatment was with oxygen, penicillin, and kanamycin. No local treatment was given for the gangrene.

Investigations. Results of investigations are set out in the Table.

<table>
<thead>
<tr>
<th>Day</th>
<th>Platelet Count mm$^2$</th>
<th>Haematocrit (venous) %</th>
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<tbody>
<tr>
<td>2</td>
<td>32,000</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>124,000</td>
<td>63</td>
</tr>
<tr>
<td>4</td>
<td>140,000</td>
<td>69</td>
</tr>
<tr>
<td>5</td>
<td>142,000</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>52</td>
</tr>
</tbody>
</table>

VDRL test for syphilis: negative. Skin swabs and blood culture yielded no bacterial growth.

Clinical course. His response to treatment was satisfactory, and by the fourth day he maintained a good colour without added oxygen. On day 6, penicillin and kanamycin were stopped and chloramphenicol was started, because of clinical evidence of a recrudescence of inflammation of the gangrenous foot, despite therapy. The chloramphenicol was stopped after 5 days.

During his first 3 weeks in hospital he had 4 brief episodes of vomiting, constipation, and abdominal distension, all of which responded to the oral administra-

Short Reports

Summary

A case of urinary ascites associated with myelodysplasia is described. The leakage of urine had occurred from a neurogenic bladder.

I wish to thank Mr. J. A. S. Dickson for permission to publish this case and for helpful advice and criticism.

REFERENCES


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tion of a half-strength Darrows with 21% dextrose mixture* in place of milk. From the 12th day a line of demarcation appeared on the left foot. Over the next 5 weeks autoamputation occurred. As the distal portion of the toe sloughed, a small granulating area was left, which then became covered by scab. When this dropped off it left an unscarred epithelialized surface (Fig. 2). The remainder of his stay in hospital was complicated only by difficulties with feeding; however, at the time of discharge he appeared to be neurologically abnormal, with increased limb tone, exaggerated reflexes, and abnormal eye movements. This has been confirmed at subsequent examinations.

**Discussion**

Peripheral gangrene in the newborn baby usually comes on suddenly during the first few weeks. Approximately one-third of the cases have their onset during the first 48 hours, the remainder being evenly distributed through the next 4 weeks (Askue and Wong, 1952). Information concerning birth-weight is scanty, but we could find no other case recorded where the baby weighed less than 1·50 kg. The pulses in the affected limbs are often absent or diminished, and the gangrenous part is usually peripheral. The mortality rate is said to be about 30%, and many cases require local reconstructive operations (Smith et al., 1965).

The most popular aetiological theory at present is that of distal arterial occlusion by emboli, as emphasized by Gross (1945). He called particular attention to the possibility that the placenta, ductus arteriosus, or umbilical arteries might be the source of these emboli. In the patient described above, the gangrene was present at birth, and if due to emboli these must have come from the placenta.

Systemic infection has been implicated as a causative factor, particularly by Heller and Alvari (1941). In this case, despite the absence of bacteriological confirmation, there was good clinical evidence of significant sepsis, which in our opinion played a significant role in the production of the patient’s gangrene. Antibiotics administered to the mother before delivery and the child before the collection of specimens, probably accounts for the negative bacteriological studies.

Polycythaemia is also mentioned as a contributory factor (Askue and Wong, 1952). The haematocrit readings of 63% (Day 4) and 69% (Day 5) are high, even for an infant as small as this, suggesting a positive contributory role.

External compression has been suggested as a possible causative factor (Heller and Alvari, 1941). There is usually clinical evidence of this in the form of pressure marks on the skin, which were not found in our case.

The reduced platelet count can be explained as a result of consumption in the thrombosing blood vessels of the gangrenous toes (Corrigan, Ray, and May, 1968).

The presence in this patient of symptoms of disturbed gastrointestinal function, cerebral damage, and peripheral gangrene suggests that emboli were disseminated throughout the systemic circulation. The gangrene seems to have occurred as a result of the combination of a number of the possible causative factors, and may represent only the most obvious clinical manifestation of a generalized disorder. The need for multiple aetiological factors to act simultaneously in a particular case may explain the rarity of this condition.

**Summary**

The case of a newborn premature infant, who presented at birth with gangrene of the left foot, is reported. A multiple aetiology is suggested, including arterial embolization from the placenta, systemic infection, and polycythaemia.

I wish to thank Dr. J. G. Burger, Medical Superintendent of Groote Schuur Hospital, for permission to publish.

**References**


*Baxter solution.
Urethral Prolapse in Girls

The purpose of this short report is to draw attention to a condition known to gynaecologists and urologists, but apparently unfamiliar to many paediatricians.

Case Reports

Case 1. A 6-year-old girl had noticed painless bleeding from the vulva for three weeks, unassociated with micturition. Examination showed a well-developed West Indian girl with a reddish purple swelling at the urethral orifice. Examination under anaesthesia revealed oedema and inflammation of prolapsed urethral mucosa with some discharge, from which Staphylococcus pyogenes was cultured. Catheterization of the bladder produced turbid urine which was, however, uninfected. Hb 9.9 g/100 ml; other investigations normal. She was treated with a course of oral ampicillin and local applications of hydrocortisone and neomycin for one month. There has been no evidence of relapse after two years.

Case 2. For two weeks a vulval mass had been noted in this 6-year-old girl. This was painless but she had had intermittent haematuria for the same period. Examination revealed a pink prolapse of the urethra. Bladder catheterization produced clear, uninfected urine, and biopsy revealed thickened epithelium infiltrated with polymorphs. The prolapse was excised. A year has elapsed without recurrence of symptoms.

Case 3. Blood stains on the underwear were noted a day before and again on the morning of admission in this 5-year-old girl. Past health had been good apart from recurrent mild epistaxis. Examination revealed a reddish purple mass at the urethral orifice, which bled on being touched. Hb 12.6 g/100 ml, WBC 4500/mm³ with a normal differential count; platelets 248,000/mm³. Bleeding time, clotting time, and prothrombin index normal. Examination under anaesthesia confirmed the diagnosis of urethral prolapse, and the bladder was catheterized with the production of clear, uninfected urine. Hydrocortisone and neomycin was applied locally and the child was discharged in 48 hours, much improved. Local treatment was continued for a month, and two months later there was been no sign of relapse.

Discussion

Though urethral prolapse was first described nearly 250 years ago, probably less than 400 cases have been recorded. Säuerlin (1929) collected all the examples he could find up to that date and reported on 270. He analysed 211 patients with the condition, almost exactly half of whom were children. Since that time there have been a number of single case reports but only one large series, that of Owens and Morse (1968) which dealt with 54 children. The early authors recognized that the condition occurred either in childhood or old age, and rarely between puberty and 60 years. The youngest child reported was only 5 days old (Barnes, 1953). Recently American authors, Peters (1962) and Owens and Morse (1968), have noted a predilection for Negro girls, and this may have some bearing on the apparent infrequency of examples in this country in the past, and it is noteworthy that our three girls were West Indians. This racial preference does not seem to affect elderly patients.

The usual method of presentation is with bleeding, usually only enough to soil clothing, though occasionally haematuria may occur (as in Case 2). Sometimes the bleeding is mistaken for the onset of menstruation. Urinary symptoms are infrequent, but scalding micturition, frequency, incontinence, and retention have all been described. The children are not ill and their activity is unimpaired.

The diagnosis is made by inspection, when the prolapsed urethral mucosa will be seen as a nontender mass surrounding a central urethral orifice. The colour varies from pale red to black, depending upon whether the mucosa is merely oedematous or has progressed to gangrene.

Histology of the lesion varies from simple oedema to dilated and thrombosed veins with or without superadded inflammation. Diagnosis is not difficult as long as one remembers that the prolapse is circular and encloses a central urethral orifice. This appearance excludes caruncle which only affects one segment of the urethra. A urethral polyp will be seen to protrude from the orifice. Sarcoma botryoides, ureterocele, neoplasm, or condylomata might enter the differential diagnosis, but none of these shows the essential characteristic of a circular mass with a central orifice.

The reason why the condition is seen at the extremes of life and rarely during the reproductive age is unknown. Epstein and Strauss (1937) point out that a relatively long and perpendicular urethra
Peripheral gangrene in a newborn.

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