

contaminant of clinical specimens, the organism is generally viewed as a nonpathogenic.^{2, 5-7} Yet, in recent years the frequency of true disease caused by nontuberculous mycobacteria has increased, especially in immunocompromised hosts,⁸ with reports of *M. gordonae* causing severe infections (e.g. disseminated disease^{1, 9-11}) or pulmonary infection.^{1, 12} These observations suggest that the clinical significance of *M. gordonae* isolation should not be underestimated in immunocompromised hosts, especially in patients with AIDS. All case reports of *M. gordonae* bacteremia in AIDS patients were associated with disseminated disease accompanied by multi-organ system involvement and symptomatic disease.⁹⁻¹¹ To the best of our knowledge this case represents the first report of sustained bacteremia without evidence of symptomatic disease.

Although our patient was asymptomatic, we were compelled to treat his bacteremia because of his severe immunocompromised state (CD4⁺ T cell count, <50/mm³). The patient was treated with three antimycobacterial drugs as recommended for the management of nontuberculous mycobacterial bacteremia in severely immunocompromised HIV-infected patients.¹³ However, this strategy reflects experience gathered from treatment of *Mycobacterium avium* complex infections and may not be optimal when treating bacteremia resulting from less pathogenic nontuberculous mycobacteria such as *M. gordonae*. We decided to initiate triple therapy to prevent symptomatic illness that typically accompanies disseminated *M. gordonae* infection. However, our treatment strategy may have some negative implications for the quality of life and medication adherence for this adolescent patient struggling with chronic illness. A less conservative approach such as initiating treatment and/or switching therapy to a single agent (i.e. clarithromycin or azithromycin), potentially risks the development of antimycobacterial drug resistance and increases the risk of dissemination to other organs.

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PARALYTIC POLIOMYELITIS CAUSED BY A VACCINE-DERIVED POLIO VIRUS IN AN ANTIBODY-DEFICIENT ARGENTINEAN CHILD

We describe a case of poliomyelitis in a 3-year-old Argentinean boy with X-linked hypogammaglobulinemia. The child had no history of polio vaccination, but a poliovirus isolated from a stool sample had 97.2% genetic similarity to the Sabin 1 vaccine strain. According to the WHO definition, this is the first case reported of a vaccine-derived poliovirus infection (iVDPV) recorded in continental Latin America.

The use of live oral polio vaccine (OPV) in the polio eradication initiative has led to elimination of indigenous wild polio and certification of the Americas as polio-free in September 1994.¹ An important feature of polioviruses including the Sabin strains in OPV is their continued genetic variation through mutation and recombination. Selective pressures in the human intestine can cause partial reversion of the attenuated OPV strains to neurovirulence, resulting in vaccine-associated paralytic poliomyelitis (VAPP),² which is clinically identical with the paralysis caused by wild virus, affecting both vaccine recipients and their contacts. Risk of VAPP is highest after the first dose of OPV, estimated as 1 case per 750 000 children vaccinated, and 3000 times higher in immunocompromised persons. Only OPV causes VAPP, the only indigenous form of polio in those countries that have eradicated wild poliovirus.^{3, 4}

A major challenge for the polio eradication "endgame" strategy is the recent characterization of vaccine-derived polio viruses (VDPV), defined by the WHO as a Sabin vaccine virus that shows >1% drift in the VP1 region of the genome.⁵ Both types of VDPV, those circulating in the population (cVDPV) and those from immunodeficient long term excretors (iVDPV), may acquire both the neurovirulence and the transmission characteristics of wild-type strains, leading to polio outbreaks.

In this communication we present one case of paralytic polio caused by an iVDPV in a primary antibody-deficient child and the implications for the polio eradication endgame strategy.

Case report. The patient is a boy born in 1995 from consanguineous parents living in the rural area of the city of San Pedro, in the province of Buenos Aires, a community with

low socioeconomic status and poor hygiene conditions including lack of drinking water. The child had no history of medical problems, and his vaccination history consisted of only one dose of Calmette-Guérin bacillus at birth. He had not traveled out of his village and was not thought to have been in contact with persons recently vaccinated with OPV.

At 3 years of age, in September 1998, he was hospitalized because of fever lasting for 24 h, associated with progressive asymmetric flaccid paralysis. Medical examination found Stage 1 malnutrition and decreased muscular tone in both legs and left arm, involving both proximal and distal muscles. Tendon reflexes were decreased in the right arm and absent in the left arm and both legs. No sensory loss was noted. Lumbar puncture revealed pleocytosis (82 cells/mm³) and elevated protein concentration (1.49 g/l). The glucose value was normal.

He had a marked deficiency in immunoglobulins: 3.23 g/l for IgG (normal range, 8.2 to 13.2 g/l); 0.15 g/l for IgM (normal, 0.65 to 1.01 g/l); and 0.07 g/l for IgA (normal, 0.57 to 1.33 g/l). Salivary IgA was undetectable. T cell subsets were determined with flux cytometry. CD3 and CD8 populations were in the normal range, but in peripheral blood a small decrease was noted for the CD4 subset (29%; normal range, 36 to 46%) as well as for the CD19 subset (2%; normal range of 7 to 23%). X-linked hypogammaglobulinemia was diagnosed, and the child was given monthly therapy with iv gamma-globulin.

Laboratory studies. Stool specimens obtained at the acute phase of the paralysis were inoculated into human rhabdomyosarcoma cells and transgenic mouse cell lines expressing the human poliovirus surface receptor (LB20), the WHO procedure for isolation and identification of polioviruses and also tested for enterovirus using a reverse transcription-nested PCR technique. Stool samples positive by viral isolation were investigated with the use of poliovirus-specific neutralizing antisera (CDC, Atlanta, GA) and with the Lim-Benyesh Melnick pool specific for polio and nonpolio enteroviruses and by PCR for pan-enterovirus and pan-polio Sabin 1, 2 and 3.

The first stool sample yielded a poliovirus type 1, the major capsid protein (VP1) of which showed 97.2% genetic similarity to Sabin 1 vaccine strain, thus representing a VDPV by the WHO definition. All other stool samples were negative for poliovirus isolation.

Three years later only nonpolio enteroviruses were isolated from four stool samples obtained 1 to 3 months apart during 1 year. At this time clinical assessment for residual neurologic deficit sequelae found hypotrophy of the left arm and both legs with skeletal deformities, without sensory loss. Electromyography confirmed the damage to the dorsal root ganglia.

Discussion. The present case differs from "classical" cases of VAPP, because the magnitude of the genomic sequence changes observed in this case is characteristic of a VDPV. Such isolates were found in the Dominican Republic and Haiti 2000 to 2001 polio outbreak,⁶ but to the best of our knowledge this is the first case reported in continental Latin America.

Although the duration of poliovirus replication is limited in immunocompetent persons (from several days to 3 months), it may be considerably longer in immunodeficient persons. Patients with primary immunodeficiency disorders affecting the B cell system appear to be at highest risk for prolonged poliovirus replication and excretion. This group includes persons with X-linked or sporadic agammaglobulinemia and hypogammaglobulinemia, or common variable immunodeficiency, which is more frequent and often remains undiagnosed for many years.^{2, 5, 7, 8}

This case is 1 of 12 immunodeficient individuals thus far identified worldwide as long term poliovirus carriers by the

WHO.⁷ Shedding of Sabin type 1 and 2 neurovirulent revertant viruses has been reported up to 15 years.⁷⁻⁹ To our knowledge our patient no longer excretes virus, possibly as result of to the therapeutic use of immunoglobulins. We cannot determine the time he was initially infected with the vaccine poliovirus, because stool specimens were obtained only after onset of paralysis. Knowing the rate of nucleotide substitutions in the poliovirus genome is relatively constant, 1% per year,⁸ we can infer from the 2.8% difference from the Sabin vaccine strain that this poliovirus had replicated for 2 to 3 years before the onset of the paralytic disease.

The most plausible explanation for the absence of other cases of paralytic polio in the community caused by this VDPV is the very high vaccination coverage rate (95 to 98%) with three doses of OPV in the first year of life in the area where the child lived. Low vaccination coverage and lack of supplementary immunization activities were believed to be the main risk factors in recent polio outbreaks due to circulating VDPV in Egypt,¹⁰ Hispaniola,⁶ the Philippines,¹¹ and Madagascar.¹²

During widespread circulation of wild poliovirus strains, it made sense to interrupt that circulation rapidly by the application of OPV, VAPP cases being seen as the price to be paid to keep polio at bay. In 2002, public health circumstances are different: (1) the Western Pacific, European and Americas regions are certified polio-free; (2) the rapid progress of the global polio eradication initiative (a 99% decrease in cases during the last 12 years) has substantially decreased the risk of wild-type poliovirus importation; (3) in countries using OPV, even those polio-free, the WHO now recommends supplementary immunization campaigns⁵ to avoid polio outbreaks resulting from prolonged circulation of VDPVs.

As long as OPV is used, there is the potential for circulation of VDPVs. Eradication of all polio disease therefore ultimately requires the cessation of OPV use.⁵ Because discontinuation of OPV will lead to a progressive decline in population immunity, infected persons without symptoms, which if similar to wild poliovirus would be estimated at 1 per 200 might shed VDPV in their stools, infecting an increasingly susceptible nonvaccinated population,¹³ unless polio immunization is continued by inclusion of IPV in routine immunization schedules. Only the exclusive use of IPV will eliminate the shedding of VDPVs and totally eliminate any risk of VAPP, while ensuring individual and collective protection.

The progressive switching of routine immunization with OPV to exclusive use of IPV until the total elimination of the risks of circulating polioviruses has already occurred in many countries like the US, Canada and most European countries. This should now be considered for Central and South American countries. Until this occurs OPV should not be given to immunodeficient individuals or household contacts of individuals who have immunodeficiency diseases or immunodeficiency (caused by disease or therapy) or if there is suspected familial immunodeficiency. In all these situations only IPV should be given.¹⁴

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PRIMARY OSTEOMYELITIS AND SUPPURATIVE ARTHRITIS CAUSED BY COAGULASE-NEGATIVE STAPHYLOCOCCI IN A PRETERM NEONATE

Coagulase-negative staphylococci are a major cause of nosocomial infections in neonatal intensive care unit patients. These infections are usually related to the presence of intravascular devices. An 1175-g preterm neonate developed primary osteomyelitis and septic arthritis by coagulase-negative staphylococci in the absence of any indwelling central catheters.

Osteomyelitis in the neonatal period is uncommon with a relative incidence of 1 to 3 per 1000 admissions to neonatal intensive care units (NICU).¹ Concomitant suppurative ar-

thritis is a well-recognized complication facilitated by the presence of transphyseal vessels, which usually disappear by the age of 12 to 18 months.² Hematogenous dissemination is responsible for most cases of infantile osteomyelitis,¹ but bone infections secondary to direct inoculation of bacteria can result from intrauterine fetal monitoring electrodes,³ venipunctures and heel or great toe punctures for blood sampling.

Coagulase-negative staphylococci (CONS) are an important cause of nosocomial infections in clinical situations involving intravascular catheters or artificial devices.⁴ Nosocomial infection rates are highest in the NICU.⁵ Of the 21 CONS species *Staphylococcus epidermidis* is most frequently isolated causing 72 to 88% of infective episodes. Neonates have a quantitatively as well as a qualitatively compromised host defense system, including a decreased neutrophil storage pool, decreased bone marrow progenitor cells, altered granulocyte function⁶ and, specifically, decreased serum opsonic activity for *S. epidermidis*.⁷

Despite the common occurrence of CONS bacteremia, concomitant osteomyelitis and septic arthritis occur rarely.^{1,8} We present a case of osteomyelitis and suppurative arthritis in a preterm neonate in the absence of indwelling central catheters.

Case report. A 1175-g male infant was delivered at a gestational age of 31 weeks by primary cesarean section related to maternal preeclampsia complicated by HELLP syndrome (hemolysis, elevated liver enzymes and low platelets) and fetal heart rate decelerations. The mother had a positive urine drug screen for cocaine as well as low positive DNA probe tests for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* at delivery. She received one dose of dexamethasone and one dose of iv penicillin 4 h before delivery. At delivery amniotic fluid was blood-tinged, suggesting chronic placental abruption. Apgar scores at 1 and 5 min were 8 and 9, respectively. Because of desaturation spells, possibly related to treatment of the mother with magnesium sulfate, the infant was managed with nasal continuous positive airway pressure for 6 days. The initial chest radiograph showed diffuse haziness without evidence of respiratory distress syndrome, with subsequent improvement on later films.

The patient received a 48-h course of ampicillin and gentamicin for presumed clinical sepsis. A blood culture was sterile. Umbilical catheterization was not performed, and the antibiotics were given through a peripheral iv catheter. The infant also received one 50-mg/kg dose of ceftriaxone on the first day of life and a 7-day course of erythromycin ethylsuccinate for the untreated maternal *N. gonorrhoeae* and *C. trachomatis* infections, respectively. In combination with slowly increasing enteral feedings, starting on Day of Life 4, the patient received total parenteral nutrition for 13 days through the peripheral iv catheter from Day of Life 2 onwards.

On Day of Life 14 three or four small vesicular lesions were noted on the infant's right flank. Herpes simplex viral and bacterial cultures were negative, as was a direct antigen test for herpes simplex virus. The lesions resolved spontaneously within a couple of days. Four days later the patient developed conjunctivitis of the left eye with eyelid edema and profuse discharge. A culture of the eye discharge grew CONS, susceptible only to vancomycin. The conjunctivitis was treated successfully with erythromycin ointment.

On Day of Life 22, during a session of daily occupational therapy, the patient became very irritable. The therapist was unable to extend the patient's left leg, which was flexed and externally rotated. Physical examination revealed a slight swelling of the left hip joint, but there was no erythema. The infant was afebrile. An ultrasound examination of the hip showed a widened joint space on the left, suggestive of suppurative arthritis. There were no radiographic bone