50 Years Ago in CORR

Osteomyelitis Since the Advent of Antibiotics; A Study of Infants and Children

Gordon M. Cottingham, MD, Jay M. Riden, MD, and Albert B. Ferguson, Jr, MD CORR 1959;14:97–101

The introduction of antibiotics over a half-century ago radically changed the face of infection in the industrialized world, and it is often easy to forget the rampant tragedies experienced by patients prior to that time. DiLiberti et al. [2] documented a 200-fold decline in childhood mortality rates from infectious causes from 1861 to 1996. In a review of 94 patients published in 1912, Homans [3] noted an immediate mortality rate of 7%, and of the 74 in whom he had some followup, 40 functioned well and presumably the other 34 did not. Many patients had deformities. In 1959, Cottingham and

his colleagues [1] reviewed 36 infants treated from 1940 to 1957, and 154 patients over 3 months of age treated from 1928 to 1956. Three of the 36 infants (16%) died, while 10 of the 154 older children (6.5%) died. Half of their older patients had chronic drainage with some deformity (Figs. 1, 2). They commented, “Antibiotics have lowered the mortality rate but have not prevented the biggest single complication—major crippling deformity.” They further noted,

“In all cases with crippling deformity...the damage was noted on the first roentgenogram at the time the diagnosis was first

made. None developed after treatment was instituted. From these figures it is obvious that earlier diagnosis is the key to prevention of development of complications leading to a crippled child, and the physician cannot feel secure merely because the child is getting chemotherapy.”

Fig. 1 The radiograph shows how involvement of the epiphysis could readily create deformity. (Reprinted with permission and © Lippincott Williams & Wilkins, from Cottingham et al. Osteomyelitis since the advent of antibiotics; a study of infants and children. *Clin Orthop Relat Res.* CORR 1959;14:97–101.)

Fig. 2 The radiograph shows a septic dislocation of the hip with complete loss of the femoral head and neck. (Reprinted with permission and © Lippincott Williams & Wilkins, from Cottingham et al. Osteomyelitis since the advent of antibiotics; a study of infants and children. *Clin Orthop Relat Res.* CORR 1959;14:97–101.)

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Since 1959, improved access to care, caregiver awareness of septic arthritis and osteomyelitis, and early diagnosis and aggressive treatment has undoubtedly led to a dramatic drop in mortality. DiLiberti et al. [2] observed, “The rate at which childhood infectious disease mortality rates (CIDMR) declined initially accelerated from 1881 through 1974 and then reversed course, becoming essentially 0 for 1986 through 1996.” In contrast to earlier literature, that of the past 20 years has rarely mentioned deformity, with mostly isolated case reports or reference to their treatment by such means as distraction osteogenesis. In 1991 Tudisco and colleagues [4] reported 26 patients with followup of 11 to 41 years, essentially extending back to the time of the study by Cottington et al. [1], and noted 22 of the

26 patients had no deformity. Thus, it seems that infant and childhood mortality and deformity have essentially been prevented by early diagnosis and aggressive early treatment with antibiotics and surgery where appropriate.

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