Letters

Hand contracture: An unusual sequel of intravenous fluid extravasation in the neonatal period

Sir,

A five-year-old child was brought with a non-progressive, pseudo-claw deformity [hyperextension contracture at the metacarpophalangeal (MCP) joints] of the left hand, which was not passively correctable. The parents had noticed this deformity for the past six months. There was no history of trauma or infection. The child was born preterm and had received blood transfusion, intravenous (IV) fluids and antibiotics through a cannula inserted on the dorsum of the left hand in the neonatal period. The parents recalled that the IV access had been difficult and multiple pricks were required and that the hand had swollen due to extravasation of blood, drugs and fluids. At the surgery undertaken to correct the deformity, a distinct peritendinous fibrous sheet was seen in the subcutaneous plane and over the dorsal interossei muscles that was enveloping the extensor tendons. The entire fibrous sheet was excised, the extensor tendons were tenolysed, and full correction was obtained without capsulotomy of the MCP joints. The excised tissue was identified as dense fibro-collagenous tissue with minimal chronic inflammation at histopathological examination. At one year, he has full finger closure and opening with no stiffness or
deformity. The operative scar is soft and supple, and does not impede finger movement.

Based on clinical and histological evidence, it can be surmised that the extensive fibrous sheet was the result of fluid extravasation. Accumulation of extravasated fluid leads to fibrin deposition, which in turn “glues” the extensor tendons to the skin and bone restricting tendon gliding.[1] If not dispelled during the first few months, the fibrin converts into scar tissue with long-term loss of extensor tendon gliding and shortening of the dorsal joint capsules.

Injection technique, fragility of patient’s veins, number of venepuncture attempts prior to establishing an operational IV line, and drug characteristics determine the likelihood of occurrence of extravasation.[2] Given the difficulties encountered in obtaining vascular access, frequent use of steel catheters, and catheter placement at sites with limited subcutaneous tissue (e.g. dorsum of hand or foot, scalp)[3] children and neonates are more prone to extravasations. We did not find any previous published report of extravasation-related peritendinous fibrosis of the hand in children; although occurrence of Volkman’s contracture following intravenous infusion on the leg in a child has been reported.[4] Our case differed from Volkman’s ischemic contracture as the involvement was diffuse and not related directly to compromise of arterial blood supply.

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References