Evolving presentation of leg cramps in a child with nephrotic syndrome: Questions

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Case

An 8-year-old African-American boy was diagnosed with nephrotic syndrome 3 months prior to presentation. He was noted to have proteinuria (4+ on urine dipstick) for four consecutive days while on prednisone wean and was restarted on prednisone 60 mg daily. The next day, he started experiencing intermittent cramps in his fingers and right lower leg. He presented to the emergency room (ER) 2 days later for evaluation of worsening right leg cramps. The cramps were described as intermittent, severe and not relieved with changes in position. Pain improved after administration of acetaminophen. Initial evaluation in the ER was unremarkable, and he was discharged home, but returned to the ER the same night after being woken up from sleep with severe and persistent right lower leg cramps with inability to bear weight without associated paresthesia or numbness. There was no history of trauma or acute illness, and review of systems was otherwise negative.

Apart from nephrotic syndrome, his past medical history was unremarkable. There was no significant family history of renal, autoimmune, or blood clotting disorders. Social history was unremarkable. There was no suspicion for non-accidental trauma.

Physical exam was remarkable for significant distress secondary to the leg pain. The right lower extremity was pale and cool on palpation with prolonged capillary refill time of 4–5 s, in comparison to the left. The right popliteal, dorsalis pedis, and posterior tibial pulses, although present, were diminished compared to the left. Sensation was intact. He had mild periorbital swelling, but there was no lower extremity edema noted. His vital signs were: temperature 98.3 F, blood pressure 110/60 mmHg, heart rate 120 beats/min, and respiratory rate 20/min, oxygen saturation of 98%.

Laboratory investigations showed serum creatinine of 0.8 mg/dl, glomerular filtration rate (GFR) of 70.6 ml/min/1.73 m² (bed-side Schwartz formula), serum sodium 132 mmol/l, serum calcium 7.6 mg/dl, serum albumin 1.4 g/dl. Other electrolytes including magnesium and phosphate were within the normal range. Complete blood count showed white blood cell count 5600/μl, hematocrit 39%, hemoglobin 13.6 g/dl, platelet count 273,000/μl. Urine protein/creatinine ratio was 29.5 mg/mg. Plain radiographs of the lower extremity did not reveal fractures, dislocations, joint effusions, or signs of osteomyelitis.

Questions

1. What is the differential diagnosis?
2. What are the next diagnostic steps?
3. What is the management for this condition?

The answers to these questions can be found at <http://dx.doi.org/10.1007/s00467-017-3606-7>.

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