G57 An Angel Dies on the Needle: Fatality After Injection Sclerotherapy for Prolapse Rectum in a Child

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After attending this presentation, attendees will be made aware of the toxicity of phenol, a product with multiple clinical applications that resulted in a fatality during a non-invasive surgical procedure.

This presentation will impact the forensic community by increasing its awareness about a previously unreported complication of use of phenol as a sclerotherapeutic agent for prolapse of rectum.

The goal of this presentation is to discuss the findings in a case of toxicity due to phenol toxicity that resulted in the death of child fatality after a surgical procedure for a non-life threatening condition.

Prolapse rectum (PR) or protrusion of the rectum beyond the anus occurs frequently in populations at both extremes of age. In the pediatric population, PR is usually diagnosed before the age of three years, and in adults, the peak incidence of PR is after the fifth decade of life. The etiology of PR in developing countries is usually related to diarrheal illnesses, parasitic infestations, and malnutrition. In the developed world, a common cause is cystic fibrosis. Surgeons have shown considerable ingenuity in the search for the ideal operation for PR. Over 200 different procedures have been employed, suggesting that the ideal surgical solution has remained elusive. Treatments include conservative management, resection and fixation, levator ani repair, presacral packing, Thiersch's wire suture and injection sclerotherapy. The last is considered an attractive treatment option because it is minimally invasive.

The case presented is of a 2-year-old female child, with PR, cystic fibrosis, and Ebstein malformation of the tricuspid valve. Due to refractory PR, the decision was made to treat her with injection sclerotherapy, using phenol as the sclerotherapeutic agent. In the operating room, and shortly after the injections, the baby had a sudden cardiac arrest, and received CPR for approximately 2 hours. She developed anoxic encephalopathy, rhabdomyolysis, non-hyperthermic elevated creatine kinase (CK) levels, and disseminated intravascular coagulopathy (DIC). She died approximately 4 days after the surgery. An antemortem urine specimen submitted on the day after the surgery had a total phenol concentration of 240mg/L. Phenol concentrations, done as part of workplace testing, in unexposed and chronically individuals should be below 10 and 30 mg/L.

At autopsy, the baby's external appearance and internal organs were appropriate for age. There was a reddish discoloration around the anus, and separate reddish brown discoloration to the buttocks. Internally there were multiple punctuate hemorrhages on the mesentery and capsule of internal organs. There was intraparenchymal hemorrhage within the lungs and spleen, and red blood cell casts within the renal pelvis. The anal canal was infarcted. The evaluation of the heart (48.2 grams) confirmed the Ebstein malformation. The muscle biopsy revealed nonspecific congenital myopathic changes with decreased myophosphorylase and glycogen. The section of liver showed PAS & PASD negative vacuolization of the hepatocytes. Examination of the brain revealed cerebral edema with acute hemorrhagic infarct of the left occipital cortex, and multifocal subarachnoid, cortical, and cerebellar hemorrhages.

A variety of sclerosing agents have been used with varying success rates. Phenol preparations have been used in dermatology and plastic surgery for the treatment of acne and during chemical face peels. During cutaneous application of phenol, absorption of the chemical has occurred with deleterious systemic effects, including cardiac arrhythmias have been reported. The publications about the value of the use of Phenol as sclerosing agent for PR have been mixed. One report indicated 90 to 100% cure rates after one or two injections and no complications. Another report indicated complications, including mucosal sloughing and perianal fistulae, in 27% of cases. No cases of fatality due to phenol toxicity after injection sclerotherapy have been reported in the medical literature.

This case report describes the steps taken to establish the diagnosis of phenol toxicity, and eliminate the other causes of sudden death suggested by the initial differential diagnosis. The forensic community should be aware of the toxicity of phenol as it has multiple clinical uses, and can result in fatality.

Prolapse Rectum, Injection Sclerotherapy, Phenol Toxicity

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