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Possible Intravascular Caudal Injection

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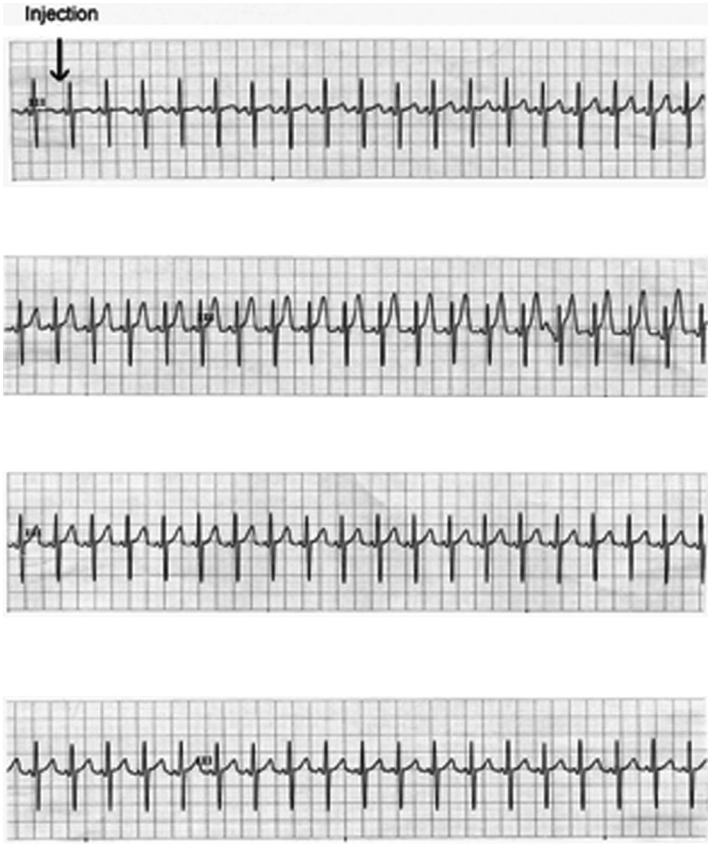

ANESTHESIOLOGISTS rely on electrocardiogram tracings to demonstrate recognizable and reliable changes after inadvertent intravascular injection of local anesthetic when establishing caudal analgesia. Caudal injection was planned to follow inhaled induction of Sevoflurane anesthesia in a 6-week-old 4.3-kg girl who presented for bilateral inguinal herniorrhaphies. After negative aspiration for blood or cerebrospinal fluid, 1 ml 0.25% bupivacaine with epinephrine 1:200,000 was injected into the caudal canal. The figure consists of four segments of a continuous electrocardiogram representing approximately 60 s during the care of this child. Initially, no electrocardiogram changes were noted. Twenty seconds later, after a repeated negative aspiration, 2 ml of the same local anesthetic solution was injected ("Injection" label on the tracing). Pronounced T-wave elevation developed whereas the heart rate remained unchanged. Guided by these changes, the needle was removed and the remainder of the caudal injection was abandoned. Anticholinergic medications had not been administered. Intraoperative narcotics were not necessary; the pain score on arrival to the postanesthesia care unit was 0, suggesting the block was effective.

In children, identification of possible intravascular injection after epidural test dose administration using changes of amplitude of the T-wave is more sensitive (95–100% sensitive) compared with using changes in heart rate (70% sensitive).[1,2] The electrocardiogram tracing displayed demonstrates pronounced T-wave amplitude changes without any change in heart rate. Of equal significance, the observed T-wave changes were ephemeral—they appeared and vanished within 40 s. This highlights the importance of observing the electrocardiogram throughout the entire course of caudal local anesthetic injection, because changes may occur after a negative initial "test" dose. Observing the electrocardiogram waveform is essential, as an anesthesiologist only monitoring the heart rate would not have identified this possible intravascular injection.

References

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