Administration of epinephrine should be intramuscularly in the anterolateral aspect of the thigh. The length of the epinephrine autoinjector, EAI, needle should assure intramuscular injection” Dreborg et al (2018).

Abstract:

BACKGROUND: Administration of epinephrine should be intramuscularly in the anterolateral aspect of the thigh. The length of the epinephrine autoinjector, EAI, needle should assure intramuscular injection.

OBJECTIVE: To discuss suitable needle lengths of EAI's based on ultrasound measurements related to weight.

METHODS: The skin to muscle distance (STMD) and skin to bone distance (STBD) was measured by ultrasound on the mid third anterolateral area of the right thigh, applying either high pressure (max)(8 lb.)(HPEAI) or low pressure (min)(LPEAI) on an ultra-sound probe. Three hundred two children and adolescents and 99 adults were included. The STMDmax and STMDmin as well as the STBDmax and STBDmin were estimated.

RESULTS: Using HPEAI's, the risk of periosteal/intraosseous penetration was 32% in children weighing less than 15 kg. The risk of subcutaneous injection was 12% in adolescents and 33% in adults. With LPEAI's, there was no risk of periosteal/intraosseous injection and the risk
of subcutaneous injections in adolescents and adults was less, 2 and 10%, respectively. A new EAI aimed for injection in small children would have no risk of periosteal/intraosseous injection but 71% chance of subcutaneous deposit of epinephrine.

CONCLUSION: Common HPEAIs have a high risk of periosteal/intraosseous penetration in children and subcutaneous injections in overweight and obese adults. The LPEAIs have some risk of subcutaneous injection in adults. HPEAIs 0.1 mg epinephrine and shorter needle has no risk of periosteal/intraosseous injection but a high risk of subcutaneous deposit. For use in adult, over-weight/obese patients, HPEAIs and LPEAIs should have longer needles. Future studies should focus on the triggering pressures and the variations in needle length.

Reference:


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