Editorial Note on Cecum Location in Rats for Intraperitoneal Injections

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Intraperitoneal injection may be a common route for parenteral administration of medicine in rodents. A significant consequence related to this system, however, is the puncture of important organs like the cecum, which causes pain and infrequently peritonitis. Reports have described the cecum as located on either side of the lower abdomen, contributing to the thought that intraperitoneal injections are often performed in either side. The authors investigated the situation of the cecum in man and feminine albino and pigmented rat strains, and evaluated the results of intraperitoneal injections within the right and left portion of the lower abdomen. Of the rats they investigated, 71.8% had ceca on the left side of the abdomen. The authors also found that injections on the left side were more likely to end in punctured cecae.

The i.p. technique is straightforward and doesn't require much training. Rats are often injected daily over the course of several days (for 3–4 weeks, for instance), and with the right precautions this daily procedure doesn't cause any serious complications. However, even one poorly administered i.p. injection can have adverse consequences, including lesions of the interior organs and peritonitis (inflammation of the peritoneum). This is often not only painful for the rats, but can cause death if bacteria from the intestines enter the cardiovascular system, causing bacteremia and septic shock.

Given the potential for complications from i.p. injections, all personnel who perform this procedure in laboratory rats should be trained by a veterinarian or an experienced laboratory animal care technician. The training procedure should include an appropriate explanation of the technique, also as a review of the abdominal anatomy, in order that trainees understand the right location of organs which will potentially be punctured by the needle (Fig. 1). The cecum, for example, is the largest structure within the lower abdomen, and therefore the distension of its walls make it more likely to be pierced by a needle relative to the less distended walls of the tiny intestine. Unfortunately, there are not any reliable sources of data with reference to the cecum location and therefore the appropriate side for injections.

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