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The mesentery (i.e., visceral adiposity) is the largest organ by volume

Sumara Jaimungal, Vikita Kowlessar, Esther Lim, Michael Patrick Flood, Leon Walsh, Mary McComiskey, John Coffey

Department of Surgery, University of Limerick, Limerick, Ireland

Background: Recent clarification of the anatomy of the mesentery has enabled its digital reconstruction and characterization. This capacity enables the generation of new normative standards in abdominal anatomy. This is important as the mesentery corresponds to visceral adiposity. We determined the characteristics of the mesentery and compared these with those of the liver.

Methods: Following ethical approval and informed consent, computer tomographic (CT) imaging of patients who underwent CT abdomen and pelvis were imported into Horos. Patients without known intra-abdominal pathology were selected. The mesenteric and non-mesenteric domains were digitally separated for each patient data set. All organs of the mesenteric domain were serially subtracted from this, and the volume of these determined and compared using RStudio. $P < 0.05$ was considered significant.

Results: Forty-nine patients were recruited to the study. The mean age was 63 [standard error of mean (SEM) 2.18], with a female preponderance ($n=36$, 73.5%). Mean mesenteric and liver volumes were calculated as $2,176 \text{ cm}^3$ (SEM 205.5) and $1,596 \text{ cm}^3$ (SEM 67.51), respectively. Mesenteric volume was significantly greater than liver volume ($P=0.0471$). Additionally, men had a significantly

higher mean mesenteric volume than women ($3,557 \text{ cm}^3$, SEM 452.2; $1,581 \text{ cm}^3$, SEM 167.7, $P=0.0002$).

Conclusions: The mesentery is the largest organ by volume in the abdomen. Given that, the mesentery corresponds to visceral adiposity. This means that in general, visceral adiposity exceeds the liver in volume.

Keywords: Adiposity; mesenteric domain; mesentery; liver; volume

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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