Intensive Care Med (2019) 45:1303–1304
https://doi.org/10.1007/s00134-019-05576-3

IMAGING IN INTENSIVE CARE MEDICINE

Detection of free air within the abdomen: the abdominal point

Xiaobo Yang[1,2*]

This 44-year–old male sustained injury in a motor vehicle accident. Due to suspicion of intra-abdominal trauma, ultrasonography was performed. Figure 1 shows peritoneal stripe enhancement with reverberation artifact deep to the peritoneal line. This is consistent with free air within the abdomen. Adjacent to the air collection is a fluid-filled intestinal structure with a thin peritoneal stripe. As there is no interposed air between the peritoneum and the intestinal structure, there is no free air at this site.

Video 1 shows another finding of abdominal free air. At the interface of the air collection and fluid-filled intestine, there is a mobile interface. This results from movement of the fluid-filled gut structure into the adjacent abdominal free air collection due to transmission of diaphragm excursion and/or aortic pulsations. This may also occur at the interface of free air and intrabdominal fluid. The finding is akin to a lung point seen with thoracic ultrasonography that results from the intermittent respirophasic movement of the partially deflated lung into the pneumothorax space. The same dynamic occurs with abdominal free air, where the intestinal structure is seen to move in and out the free air collection. Given the similarity of mechanism, this could be termed an "abdominal point", the finding of which is consistent with abdominal free air.

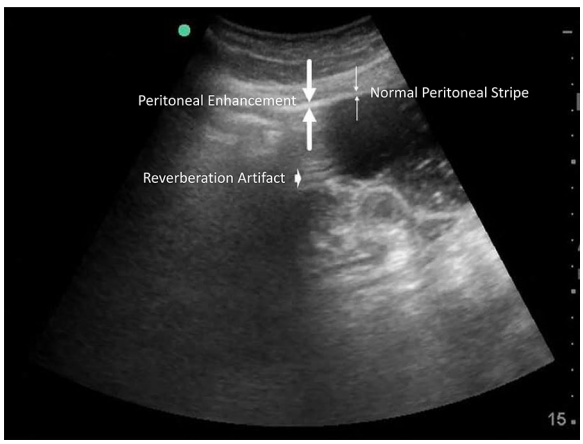

Fig. 1 Ultrasonography findings of focal enhancement of peritoneal stripe (thick arrows) with reverberation artifact (arrowhead) in comparison with adjacent normal peritoneum (thin arrows)

Electronic supplementary material
The online version of this article (https://doi.org/10.1007/s00134-019-05576-3) contains supplementary material, which is available to authorized users.

Author details
[1] Department of Critical Care Medicine, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China. [2] Institute of Anesthesiology and Critical Care Medicine, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China.

Compliance with ethical standards

Conflicts of interest
The author declares no competing interests.

*Correspondence: want.tofly@aliyun.com
[1] Department of Critical Care Medicine, Union Hospital, Tongji Medical College , Huazhong University of Science and Technology , Wuhan, China
Full author information is available at the end of the article

Springer

Ethics approval
This study was approved by the ethics committee of Union Hospital, Tongji Medical College, Huazhong University of Science and Technology. Written consent from the patient was waived because of entirely anonymised images from which the individual cannot be identified.

Publisher's Note

Received: 30 January 2019 Accepted: 19 February 2019
Published online: 27 February 2019