Reviewer's report

Title: Lung ultrasound: a useful tool to differentiate acute cardiogenic pulmonary edema and acute respiratory distress syndrome

Version: 1 Date: 3 March 2008

Reviewer: Luna Gargani

Reviewer's report:

Major Compulsory Revisions

- The content of this work is excellent and of great potential future clinical impact. These first data are very important, although the population is very small, thus the echographic signs proposed in the work should be easily reproduced by any other sonographer. On this purpose, I would suggest to be even more descriptive about the echographic signs in the "Methods" section: lung ultrasound is a relatively new field, therefore we must be very precise in describing these qualitative signs. An image referring to every alteration would be appropriate.

- Abstract: in the "Methods" section, it is not specified how you studied your patient, while the first two sentences of the "Results" section refer to methods.

- Page 4, line 22: I would suggest not to call B-lines "comet-tail artifact". As already reported (your reference 27), it may be misleading, as the comet tail has a not totally artifactual origin: the first echo has a clear physical origin in the thickened interlobular septa, and thus it is not a true artifact. Moreover, recent literature on this topic uses two different appellations: B-lines and ultrasound lung comets. Hence, I would substitute "comet-tail artifact", with "ultrasound lung comets".

- I do suggest to avoid to mention the B7 and B3 lines, as this differentiation has been used only in one work (your reference 10) and not subsequently confirmed in other studies. Moreover, it is very difficult to measure the distance between B-lines, and the absence of this peculiar analysis in your work confirms the relative uselessness of this parameter. This reviewer thinks that introducing this differentiation would not help people in using lung ultrasound, but would only create confusion.

- Page 6, line 1. You mention two different kind of probes, so you should specify (maybe in the discussion) whether you used both probes in all patients and why, or in case you used only one probe, which one you would suggest, and specify the eventual differences in the assessment between the two.

- Page 7. The images of this work are very beautiful, but it would be really helpful to divide the images in typical APE lung echographic pattern and typical ALI/ARDS lung echographic pattern. I would also include an image of an
abnormal pleural line, indicating the thickenings greater than 2 mm.

- In Table 3, please provide relative percentage near the numbers.

- Please provide sensitivity and specificity of all echographic signs for both conditions.

- Page 8. Did you find the echographic appearance of a â##white lungâ## in the posterior lung fields in all patients with ALI/ARDS? What about the feasibility of performing the examination on posterior chest in intubated patients?

- Page 9. â##Quantitative analysis of the prevalence of ...â## is actually still a â##Qualitative analysisâ##, thus the two sections should be put together.

  The presence of pleural effusion is significantly more frequent in APE than in ALI/ARDS, thus the sentence â##With the exclusion of AIS and pleural effusionâ## is not correct. It should be also underlined in the discussion, that although this statistically significant difference, the presence of pleural effusion does not help in the differential diagnosis between APE and ALI/ARDS.

- The discussion is somewhat chaotic. I would suggest to gather all the sentences referring to the main topics: pathophysiology of pulmonary edema, limits of chest X-ray and chest CT, usefulness of lung ultrasound in ALI/ARDS.

- Pag. 10 last paragraph: when you write that mechanical ventilation is unlikely to modify ultrasound appearance, do you mean immediately? Otherwise, it is likely that, if effective, mechanical ventilation would be able to recruit lung parenchima, modifying the ultrasound appearance, as you also suggest on page 12.

- In the whole text: please do not hyphen when you are still speaking about the same issue.

- Finally, I would warmly suggest a revision of the text by an English mother-tongue.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.