Author’s response to reviews

Title: Isolated unilateral adrenal gland hemorrhage following motor vehicle collision. A case report and literature review

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Author’s response to reviews:

Reviewer 1
- Please clarified in the abstract the meaning of FAST Exam

A FAST exam is a focused assessment with sonography for trauma utilized in trauma setting to assess possible intra-abdominal organ injuries in blunt trauma.

Reviewer 2
- The discussion needs to be more about the current case although the authors did a good job in comparing it to the other cases. the conclusion must be more directed to the medical value of this case and how it would rich the medical literature in the future

Thank you for your input. Editions have been made to the conclusion section to be more relevant toward future management of similar cases.

- Additional comments for the author(s)?

it would be better if the case is directed toward the important signs and diagnostic challenges to reach a solid diagnosis of unilateral AGT and showing the importance of diagnosing such a case
The presented case is indeed not a new presentation but possess the question of how to follow hemorrhage of the adrenal gland without evidence of other organ injuries. The diagnostic challenges purposed here are what imaging interval to pursue with a large adrenal hemorrhage and when is biochemical workup indicated.

Reviewer 3
- Please, report keywords as separate words, not as a brief title
- References 5, 8, 9, 10, 12, 15, 16, 17, 18 are missing

Reformatting of the ‘Keywords’ and the references were replaced in appropriate locations in the text.

- Figure 3: I do not see the right adrenal gland, but only the lower half of the right kidney. Moreover, why did you perform the CT scan with oral contrast?

Please see additional 3 images (Figures 1B, 2B, and 3B) attached in coronal views to show better angle of the right kidney and the adrenal hemorrhage progression. The follow up CT scans were completed with oral and IV contrast for better identification of adrenal masses. The surrounding structures near the adrenal glands are better differentiated with IV and oral contrast from upper pole of the kidney, tortuous splenic vessels, periadrenal collateral blood vessels and pancreatic masses.

- Was the first CT scan contrast-enhanced? Did you perform an arterial phase to assess possible contrast extravasation?

The initial CT scan on 06/04/16 was completed with IV contrast only with Isovue-370 with arterial phase enhancement, no contrast extravasation was noted.
- You wrote "A follow-up repeat CT scans was scheduled [...] to rule out occult neoplasms." [page 5; line 12-14]. It appears difficult to understand why you need to rule out possible occult neoplasms until the conclusion section, where you explained it. Please, make it clear.

Thank you for your comment. I can see the statement does not clearly explain the reasoning for possible neoplasm as a diagnosis. I have modified the text accordingly to make it more clear.

- I do not understand what the reference 3 at the end of the sentence "The case of [...] injuries occurred [page 5; line 49-51]" stand for.

Thank you for your comment. Reference 3 explains how adrenal injuries are normally present with other injuries: especially in the context of blunt force trauma from high speed motor vehicle crashes. However, I understand how the sentence might have been ambiguous, and have reworded it accordingly.

Reviewer 4

- One question that I would ask the author would be in regards to the follow up care plan. If the radiology report did not specifically mention "cannot exclude underlying neoplasm", would the author pursue the follow up imaging studies in the same manner. Rather, if this was simply a unilateral adrenal hemorrhage would it have prompted at follow up scan at all? Another question regarding the follow up imaging. How was 2 months decided to be the follow up interval for the third scan? Is this though based on doubling time of adrenal masses or was consideration given to the time it would take for the existing hemorrhage to be reabsorbed. Lastly, was other imaging modalities or laboratory work considered for the work up of an underlying mass? Overall, the article is well written and informative.

Thank you for your comments and discussion; we had similar questions as the ones you posed while managing the patient.

The initial CT read did not mention a possible neoplasm but a “normal right adrenal gland was not visualized” due to the overlying size of the fluid collection. Due to patient being
symptomatic in the right upper quadrant immediately after blunt trauma, the most likely diagnosis would be hemorrhage, however we could not rule out pre-existing adrenal mass or hemorrhage into an adrenal tumor. Due to the patient presenting after a trauma, the initial CT was completed only with IV contrast. The follow up CTs were done with oral contrast and were able to exclude other possible pathology. The patient did not show any clinical signs of adrenal insufficiency during admission and had stable electrolyte panel on follow up lab work. Furthermore, the follow up CTs showed progressive decrease in size of the fluid collection and patient had resolution of pain, subsequently we did not pursue workup for incidental adenoma.

Since there are no guidelines for follow up of adrenal hemorrhage, our management was based on serial abdominal CTs and clinical symptoms. Our initial repeat imaging was at 1 month with close follow up to insure the size of the mass was decreasing. Since the fluid collection was down to 3cm from 4.6cm at 1 month and imaging features did not have malignant characteristics, such as irregular contours and inhomogeneity; this was less concerning for a malignant mass. Subsequently, we did no pursue biochemical evaluation but opted out to follow up the fluid collection with another serial imaging. Because at 1 month 40% of hemorrhage was reabsorbed, interval of another 3 months was set as adequate amount of time for hemorrhage to be reabsorbed.

Considering incidental adenoma on the differential diagnosis, since incidental adenomas <4cm are usually followed with repeat imaging at 4-12 months, we choose a follow up at 4 months after the initial imaging. In retrospect, biochemical analysis might be appropriate at the initial follow up to rule out functioning adenoma.