Author's response to reviews

Title: Inferior Thyroid Artery Pseudoaneurysm Associated with Internal Jugular Vein Puncture: A Case Report

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Author's response to reviews: see over
Dear Editor,

Thank you very much for all the thoughtful comments from you and the reviewers. We have revised the manuscript by using the red text according to your kind advice and detailed suggestions.

If you have any further questions, please feel free to contact me. I am looking forward to hearing from you soon. Thank you very much for your considerations about our paper on the “BMC Anesthesiology”!

Sincerely,

Zhiying Feng

Dec 20, 2014
Please find the following Response to the comments of referees:

Reviewers' comments:

Reviewer 1:
Major Compulsory Revisions
This accident even if infrequent, is well known by physicians especially the ones working in the field of ultrasound (US) guided CVC placement. Its management is mandatory especially in case of respiratory failure. This accident in fact can happen more frequently when CVC placement is performed without ultrasound guidance. Even if the authors pointed out that the risks for hematoma or bleeding after an accidental arterial puncture are increased when blood test are pathologic for a liver disease, we believe that this informations are well known by anesthesiologists and intensivists, especially the new generations that approach to these problems with the help of US guidance.
Response:
Thank your for your good suggestion.
It was well demonstrated and reported that real-time ultrasound-guided central vein puncture significantly increases safety, effectiveness and efficiency of vascular access, as compared to cannulation by anatomical landmarks. However, there was only one ultrasound machine for 40 operation rooms in our department. We are not able to get the machine routinely. After the failure of the first attempt on the right side internal jugular vein, we made the effort to obtain the ultrasound by considering the patient’s liver function and the coagulopathy, we placed the left central venous catheter smoothly under the guidance of real-time ultrasound.
This is also the reason we wrote the manuscript. We are hoping to report the complication during the internal jugular vein placement to advocate how devastating consequence is without proper equipment, such as US machine.
Minor essential revisions
Language must be edited. (e.g. The pull/pressure technique was used because of considering 18-G needle as being less traumatic. -> lines 9-10 pag 5)
Response:
Thank you for your good advice. We have edited to “The pull/pressure technique was used because we thought 18 G needle was not much traumatic, but the fact it was traumatic on the patients with high risk factors”.

Reviewer 2

Major Compulsory Revisions
1) There are several compelling evidence showing that real-time ultrasound-guided central vein puncture significantly increases safety, effectiveness and efficiency of vascular access, as compared to cannulation by anatomical landmarks, leading national organizations, such as National Institute for Clinical Excellence (NICE) or Agency for Healthcare Research and Quality (AHRQ) to recommend ultrasound guided CVC placement [1,2]. Since 2001 the report commissioned by the AHRQ, “Making Health Care Safer: A Critical Analysis of Patient Safety Practices” helped identify ultrasound-guided CVC placement as one of the evidence-based safety practices strongly recommended! In 2013, in “Making Health Care Safer II: An Updated Critical Analysis of the Evidence for Patient Safety Practices”, the expert panel explicitly considered the strength and quality of evidence about effectiveness and implementation for each patient safety strategy (PSS) and concluded that 22 PSSs are ready to be encouraged for adoption NOW by health care providers. Ultrasound-guided CVC placement is still among the strongly
recommended patient safety strategies! In the 2012, Lamperti et al. published on Intensive Care Medicine international evidence-based recommendations on ultrasound-guided vascular access addressing the best practice of this procedure [3]. This is the only and most recent paper addressing important issues regarding the optimal technique to use and how to apply ultrasound-guided venipuncture in everyday practice in order to reduce and detect life-threatening complications. For this reason this paper should be quoted!

Response:

Thanks for your invaluable advice. We have quoted this paper.

2) On page 5, from line 10 up to line 13, the authors state, correctly, that one of the lessons learned from this case is that “… no real time ultrasonography was used during the CVC attempt…”. Anyways, the authors should justify why they did not use the ultrasound guidance on the first attempt as recommended by the international consensus conference on vascular access [3]. Especially in this case of a patients with coagulation abnormalities (INR 1.35 in liver disease), ultrasound guidance should be routinely used! Moreover, the authors should consider that preliminary ultrasound evaluation allows proper choice of venipuncture site.

Response:

Thank you for your suggestion.

There was only one ultrasound machine for 40 operation rooms in our department. That is why we are not able to obtain the machine routinely for every case. Therefore, this case was a lesson for us. We bought another three ultrasound machine during the past summer. Since then, ultrasound ultrasound evaluation or guidance has been used routinely for every CVC placement in our department. This project is also PDCA (plan, do, check and act) of this year for
3) On page 5, from line 25 up to line 27, the authors claim “… there are still numerous reports of inadvertent arterial placement of large-bore catheters that have occurred despite the use of ultrasound guidance...”. Regarding this point, the authors should make the consideration that these complications are due to a wrong technique with a missed needle tip correct visualization, inadequate training of the operator and operator inexperience.

Response:

Thank your for your good suggestion. We carefully revised the manuscript based on your advice.

4) On page 6, from line 3 up to line 5 the authors state that “… ultrasound guidance can not eliminate the incidence of arterial puncture and has its limitation on punctured sites, its availability and cost…” This is not true! (a) When visualizing the IJV the ultrasound probe should be placed in the short axis and the needle introduction can follow an 'in-plane' (when included in the plane of the ultrasound beam) or an 'out-of-plane' (when only a very limited part of the needle can be visualized by the ultrasound beam) technique. The short axis view allows the visualization of the lateral surrounding structures (carotid artery, lymphnodes, thyroid). With this position of the ultrasound probe, the needle is usually inserted vertically above the middle part of the ultrasound probe. With this type of technique the operator has a very limited view of the needle. In the lateral short axis in-plane technique the probe is positioned in a transverse orientation, with a good view of the IJV and its surrounding structures (arteries, thyroid, lymphnodes). The needle is inserted at the level of the lateral-edge of the ultrasound probe. This technique guarantees the visualisation of the entire length of the needle during vein access avoiding arterial damages! (b) please, specify what do you mean for “…its limitations on
punctured sites...": ultrasound provides optimal visualization of internal jugular
vein, innominate vein, subclavian vein in the supraclavicular fossa and it allows
subclaverear CVC placement puncturing axillary vein. (c) Ultrasound-guided
vascular access has to be used because it results in clinical benefits and
reduced overall costs of care makes it cost-effective, as stated in the
international evidence based recommendations on vascular access.

Response:

(a) Thank you for your kind suggestion and agree fully with your techniques on
the (a).

(b) We did not explain clearly on the punctured sites. What we mean the
limitation of the ultrasound on punctured sites are on some unusual locations,
such as internal mammary artery, innominate artery, and so on. There are
some cases reports which required angiography or MRI. We revise it
accordingly.

(c). Concur with you about point of the cost-effective. We revised it in the paper.
We had convinced the administrator and bought extra ultrasound machines
already.