Author's response to reviews

Title: Abdominal Wall Activity Is Necessary for Normal Female Rat Voiding

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Version: 6 Date: 22 December 2006

Author's response to reviews: see over
To Dr. Damaser,

1. A figure demonstrating the positive abdominal pressure deflection observed to accompany voiding and one demonstrating the missing pressure deflection after BTX (referred to in lines 188 – 190) would be very helpful to readers of the paper. It would be great to also see an example figure of the positive pressure deflection in response to squeeze (referred to in line 190).

Thank you for the suggestion, such a figure has been added.

2. It is stated in the discussion section (lines 256-259) that figure 1 demonstrates that at a critical bladder pressure, the abdominal wall is activated and the IPHFO/flow phase begins. It is also stated that figure 1 demonstrates that mean bladder pressure drops during voiding. However, no bladder pressure trace is presented as part of Figure 1. This figure would be greatly improved with the inclusion of pressure data. The addition of pressure data to Figure 2 would improve the figure and the paper as well.

None of these animals had a intravesical catheter placed (the point of the study was assess voiding in the absence of avoidable physical manipulation of the lower urinary tract function) therefore I cannot produce such a figure. The statement regarding bladder pressure dropping is taken from information presented by Tomi Streng et al. ( ). Furthermore, I am no longer certain is a “critical bladder pressure” which activates the IPHFO phase as my original text implied. I have changed this paragraph and hopefully cleared this up.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. Item 4 from previous review still needs to be addressed: “How is data presented? Mean +/- ?” A sentence needs to be added to the last paragraph of methods section stating that data is presented in the text as Mean +/- ???

Done as requested.

2. Item 7 from previous review still needs to be addressed: “A table of values (Table 1) is not needed if the values are in the text of the results section. However, the number of significant digits and values ought to be in complete agreement between the two methods of presentation. In addition, the units need to be identical as well.” The values presented in the text still do not exactly match the values presented in the table. In addition, the units of ICI are different between the text (minutes) and table (sec). I recommend you only present the data in the table and do not present data in the text. This would resolve item 1 above since it is clearly stated in the table that data is presented as mean +/- sem.

Unfortunately, a pre-existing error in the data presented remained uncorrected in the revised text; the Table has the correct numbers in all cases. I have converted all
intervals to minutes as this makes more intuitive sense than expressing these durations in seconds.

3. The waveform of the perineal EMG signal is described in the results section (referred to in lines 184 & 5) but not presented as a figure. Adding a figure to the manuscript to show this waveform shape would be very helpful to readers of the paper.

Thank you for the suggestion, please see Figure 4.

Dr. Andersson,

The sentence that begins on line 289 needs to be corrected. I still think that the title should be changed. This is not a matter of semantics but of common sense. To me what is “normal” in an anesthetized rat is not very interesting, and to refer only to anesthetized animals is to unnecessarily limit the validity of an interesting observation. If the title read: Is the Abdominal Wall Contraction A Necessary Component of Normal Voiding in Female Rats?, the answers from the study is most probably “yes”, because the VAR is found in both anesthetized and conscious rats. It is clear from the present data that VAR is not necessary for voiding in the anesthetized rat (an average decrease in voiding volume from 1.8 to 1.1 ml and in average flow from 0.10 to 0.9 ml/sec, is not very impressive even if the differences are statistically significant). Whether or not VAR is necessary for normal voiding and flow can only be established in conscious, freely moving animals and should be investigated. What is found in the anesthetized rat is not necessarily found in conscious animals. It may very well be that the conscious animal can compensate for the absence of abdominal wall contraction. Furthermore, it can be established whether or not VAR is necessary for initiation of voiding or whether it significantly contributes to keep the bladder pressurized during urine flow.

The title has indeed been changed hopefully to reflect this concern. The average flow rate change reported in the text (from 0.10 to 0.9 ml/sec) was an error from an early draft which persistently crept into the last revision. The data presented in Table I are the correct data; the change in flow was from 0.17 to 0.11 ml/sec. Both volume voided and flow rate were decreased by about a third; we believe this is not only statistically significant, but also clinically significant, and points to the necessity of the VAR for normal voiding in anesthetized rats. To the other point, does this importance persist in awake rats? As Cruz and Downy demonstrated, there is VAR activity in awake rats. To really answer the question of what the contribution of the VAR is to voiding, We have studied the impact of transurethral and suprapubic cystometry on the VAR (to be presented at SUFU, and the manuscript being now prepared hopefully subsequently published) and believe that acute suprapubic catheterization for cystometry will allow for studies in which we can tease out the detrusor vs. abdominal pressure components of voiding in anesthetized and awake rats.