Article information: http://dx.doi.org/10.21037/atm-20-622

Reviewer(s)' comments to Author:

Comment 1:

The conclusion of this paper can be more specific. For example, “A higher level of viral load of some type-specific HPV may indicate VAIN”, which types of HPV?

Reply 1:

Thank you for your suggestion. We have modified our conclusion and make it more specific with clear and definite HPV types and VAIN-related bacteria. The conclusion was modified as follows. A higher level of viral load of HPV16, 52, and 58 may indicate VAIN. The composition of vaginal microbiota has changed during the process of VAIN and specific bacteria such as *Atopobium*, *Gardnerella*, *Allobaculum, Enterococcus*, and *Clostridium* may help promote the development of it.

Changes in the text:

Changes of conclusion are shown in the revised manuscript by using "Track Changes" function on page 5, lines 77-80.

We have modified our conclusion as advised (see page 5, lines 77-80).

Comment 2:

This study is cross-sectional design, so the findings from this study need to be further determined in longitudinal studies.

Reply 2:

Thank you for your suggestion. Cross-section design is indeed one of the limitations of our study and longitudinal studies are required to further verify our findings. We have added it to the section of limitations.

Changes in the text:

Changes of limitation are shown in the revised manuscript by using "Track Changes" function on page 22, lines 443-448.

We have modified our limitation as advised (see page 22, lines 443-448).

Comment 3:

The introduction is insufficient. The authors may consider to provide more detailed information on what have been known on the relationship between cervical lesions and HPV, for example, which types of HPV and low or high load of a specific HPV is associated with VAIN.

Reply 3:

Thank you for your suggestion. We have modified our introduction and added more detailed information on what have been known on the relationship between cervical lesions and HPV. We also added more detailed information on the relationship between cervical lesions and vaginal microbiota.

Changes in the text:

Changes of introduction are shown in the revised manuscript by using "Track Changes" function on pages 6-7, lines 100-105 and lines 112-115.

We have modified our introduction as advised and added more detailed information on what have been known on the relationship between cervical lesions and HPV, and the association of cervical lesions and vaginal microbiome (see pages 6-7, lines 100-105 and lines 112-115).

Comment 4:

For tables, where appropriate, statistics for comparing the two groups, specific test method (t test or non-parameter test, Mann–Whitney U-test), statistic value, and P must be provided together.

Reply 4:

Thank you for your suggestion and comment. We have already described the specific test method in part of “Methods” (pages 9-10, lines 168-189). We also added specific test method, statistic value and *P* in table 2.

Changes in the text:

Changes of table are shown in the revised manuscript by using "Track Changes" function in table 2, page 34, lines 645-656.

We added specific test method, statistic value and P in tables (see table 2, page 34, lines 645-656).

Comment 5:

Discussion. For the identified association between HPV types and loads and VAIN, more underlying pathogenesis mechanisms are needed.

Reply 5:

Thank you for your suggestion and comment. We have modified our discussion and added more possible underlying pathogenesis mechanisms of the association between HPV types and loads and VAIN.

Changes in the text:

Changes of discussion are shown in the revised manuscript by using "Track Changes" function on pages 17-18, lines 337-360.

We have modified our discussion as advised (see pages 17-18, lines 337-360).