**JPED-D-21-00009\_Supplementary material**

**Appendix 1 - Histologic items and definitions (EoEHSS)14**

1. **Eosinophil inflammation (EI)**

**Grade** **Stage**

0= absent 0= 0-14/HPF

1= <15/HPF 1= ≥15/HPF in <33% of HPFs

2= 15-59/HPF 2= ≥15/HPF in 33-66% of HPFs

3= >60/HPF 3= ≥15/HPF in >66% of HPFs

1. **Basal zone hyperplasia (BZH)**

**Grade**

0= BZH absent

1= BZ >15% <33% of total epithelial thickness

2= BZ >33-66% of total epithelial thickness

3= BZ >66% of total epithelial thickness

**Stage**

0= BZH absent

1= BZH (any grade >0) in <33% of the epithelium

2= BZH (any grade >0) in 33-66% of the epithelium

3= BZH (any grade >0) in > 66% of the epithelium

1. **Eosinophilic abscesses (EA)**

**Grade**

0 = absent

1 = groups of 4-9 eosinophils

2 = groups of 10-20 eosinophils

3 = groups of >20 eosinophils

**Stage**

0= absent

1= EA (any grade >0) in <33% of the epithelium

2= EA (any grade >0) in 33-66% of the epithelium

3= EA (any grade >0) in > 66% of the epithelium

1. **Eosinophil surface layering (SL)**

**Grade**

0= SL absent (< 3 aligned eosinophils)

1= SL of 3-4 eosinophils

2= SL of 5-10 eosinophils

3= SL of >10 eosinophils

**Stage**

0= absent

1= ASC (any grade >0) in <33% of the epithelium

2= ASC (any grade >0) in 33-66% of the epithelium

3= ASC (any grade >0) in > 66% of the epithelium

1. **Dilated intercellular spaces (DIS)**

**Grade**

0= DIS not seen at any magnification

1= intercellular bridges in DIS visible at 400x magnification only

2= intercellular bridges in DIS visible at 200x magnification

3= intercellular bridges in DIS visible at 100x magnification or lower

**Stage**

0= DIS not seen at any magnification

1= DIS (any grade >0) in <33% of the epithelium

2= DIS (any grade >0) in 33-66% of the epithelium

3= DIS (any grade >0) in > 66% of the epithelium

1. **Surface epithelial alteration (SEA)**

**Grade**

0= SEA absent

1= SEA without eosinophils

2= SEA with any eosinophils

3= Shed altered surface epithelium admixed with numerous eosinophils consistent with exudate

**Stage**

0= SEA absent

1= SEA (any grade >0) in <33% of the epithelium

2= SEA (any grade >0) in 33-66% of the epithelium

3= SEA (any grade >0) in > 66% of the epithelium

1. **Dyskeratotic epithelial cells (DEC)**

**Grade**

0= DEC absent

1= 1 DEC/HPF

2= 2-5 DEC/HPF

3= >5 DEC/HPF

**Stage**

0= DEC absent

1= DEC (any grade >0) in <33% of the epithelium

2= DEC (any grade >0) in 33-66% of the epithelium

3= DEC (any grade >0) in > 66% of the epithelium

1. **Lamina propria fibrosis (LPF)**

**Grade**

0= LPF absent

1 = fibers are cohesive and inter-fiber spaces cannot be demarcated

2 = fiber diameter equals the diameter of a basal cell nucleus

3 = fiber diameter exceeds the diameter of a basal cell nucleus

**Stage**

0= LPF absent

1= LPF (any grade >0) in <33% of the lamina propria

2= LPF (any grade >0) in <33% of the lamina propria

3= LPF (any grade >0) in <33% of the lamina propria

**Appendix 2 - Scatter plots (Intraobserver agreement).**

**COMPOSITE SCORES- EoEHSS (Grade)**

**Figure 1 - Pathologist 1 - Intra-class correlation coefficient = 0.94 (excellent agreement).**

Mean and standard deviation (first and second evaluation): 0.46 ± 0.12 and 0.47 ± 0.13 (p = 0.662).

**Figure 2 - Pathologist 2 - Intra-class correlation coefficient = 0.52 (moderate agreement).**

Mean and standard deviation (first and second evaluation): 0.39 ± 0.08 and 0.42 ± 0.09 (p = 0.008).

**Figure 3 - Pathologist 3 - Intra-class correlation coefficient = 0.77 (substantial agreement).**

Mean and standard deviation (first and second evaluation): 0.47 ± 0.15 and 0.49 ± 0.15 (p = 0.274).

**Figure 4 - Pathologist 4 - Intra-class correlation coefficient = 0.64 (substantial agreement).**

Mean and standard deviation (first and second evaluation): 0.60 ± 0.12 and 0.66 ± 0.11 (p < 0.001).

**COMPOSITE SCORES- EoEHSS (Stage)**

**Figure 5 - Pathologist 1 - Intra-class correlation coefficient = 0.90 (excellent agreement).**

Mean and standard deviation (first and second evaluation): 0.52 ± 0.12 and 0.52 ± 0.11 (p = 0.764).

**Figure 6 - Pathologist 2 - Intra-class correlation coefficient = 0.64 (substantial agreement).**

Mean and standard deviation (first and second evaluation): 0.42 ± 0.11 and 0.48 ± 0.11 (p < 0.001).

**Figure 7 - Pathologist 3 - Intra-class correlation coefficient = 0.71 (substantial agreement).**

Mean and standard deviation (first and second evaluation): 0.43 ± 0.16 and 0.47 ± 0.15 (p = 0.016).

**Figure 8 - Pathologist 4 - Intra-class correlation coefficient = 0.80 (substantial agreement).**

Mean and standard deviation (first and second evaluation): 0.53 ± 0.16 and 0.58 ± 0.16 (p < 0.001).