Assessment of E-Cadherin expression in prostate carcinoma in correlation with Gleason and Srigley grading systems

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Introduction

E-Cadherin (ECHAD) is a transmembrane cell adhesion protein correlated to the formation and growth of epithelial malignancies. The aim of this study is to assess the correlation between the expression of ECHAD and two different grading systems of prostate carcinoma described by Gleason and Srigley.

Material and methods

A series of 435 prostatic tissue areas with individual patterns of the two grading systems were immunohistochemically (IHC) stained with ECHAD and images were evaluated through a proprietary computational algorithm.

The algorithm marked the pixel where the red channel was more intense than the other channels. Then the overall color intensity of the previously selected mask was inverted and considered as the value for the intensity of the IHC staining, larger values meaning more intense staining.

Mean values (AV) distributions were stratified on each of the grading systems.

ECHAD expression location was also stratified: 01M=Membrane, 02MC=Membrane+Cytoplasm, 03C=Cytoplasm.

Results and discussion

ECHAD expression AVs had downward trend from the well differentiated (WD) to most poorly differentiated (PD) patterns in both grading systems more clearly outlined and stabilizing in Srigley system.

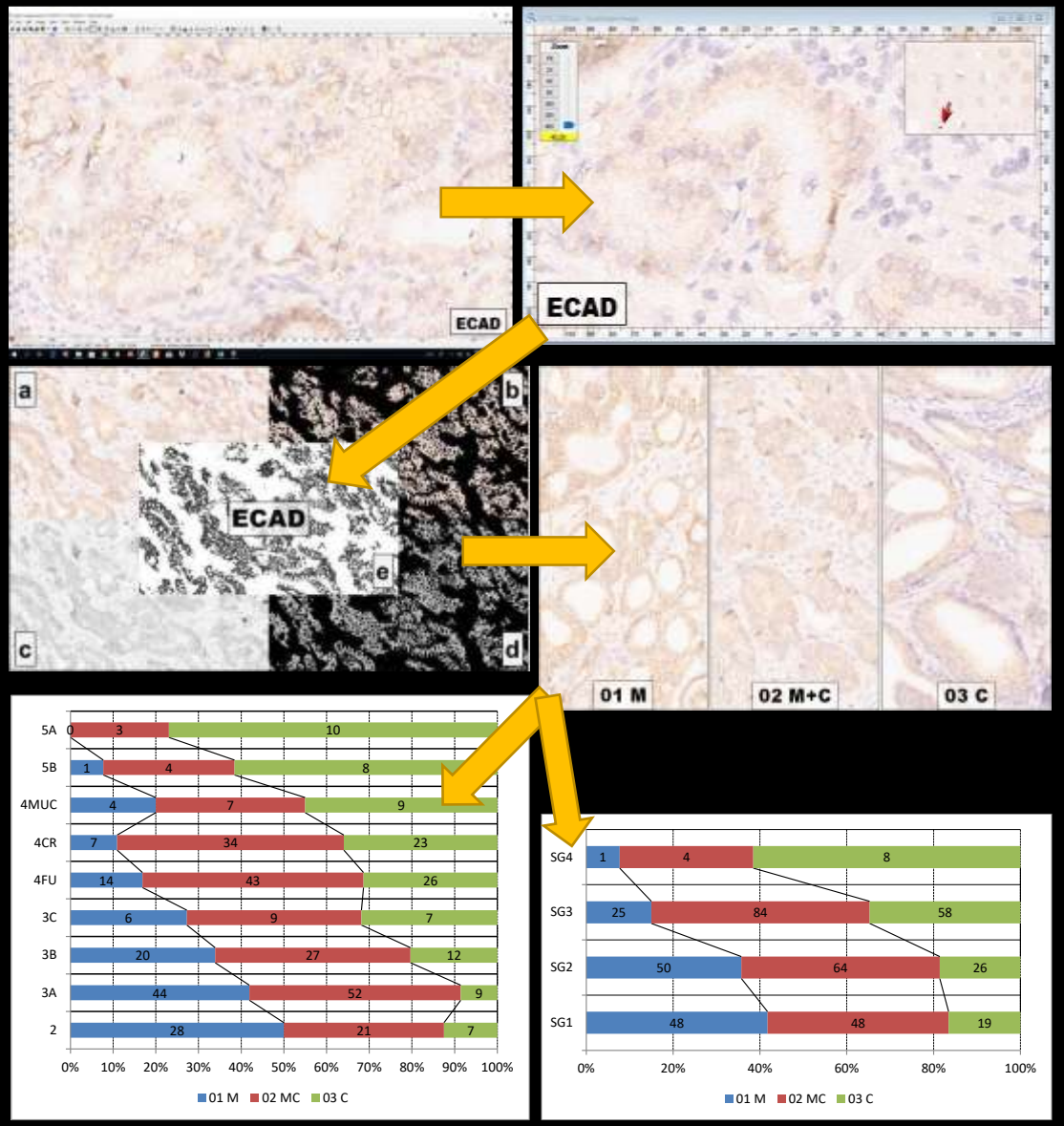
ECHAD expression site evolved from predominantly 01M in WD patterns towards 03C in PD patterns, the trend being statistically validated by chi-square test ($p < 0.0001$) in both systems.

Conclusion

The degree of intercellular adhesion revealed a decreasing trend in both grading systems, from the WD to the PD patterns.

The developed computational algorithm allowed an accurate assessment of ECHAD expression in correlation with the differentiation patterns of the two grading systems.

KW: E-Cadherin expression prostate carcinoma Gleason grading system Srigley grading system



Gleason Grading System
Chi-square 82.0030
p-value < 0.0001

Srigley grading system
Chi-square 42.5695
p-value < 0.0001