

The New Fully Automated System For Ki67 Evaluation in Pancreatic Neuroendocrine Tumors (PNETs). Would It Be Possible to Obtain a Standard to Grade Evaluation?

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Context Pancreatic neuroendocrine tumors (PNETs) are diseases with varying degrees of aggressiveness and differentiation. In some cases it is even difficult to make a histological diagnosis. The international guidelines drive the pathologist to assess histological evaluation of degree and differentiation, but this latter parameter still depends on experience of the pathologist. Grading evaluation of these tumors is based on the evaluation of mitosis number and the number of positive cells for the Ki67 marker. This type of evaluation is closely subjective as the major difficulty consists in counting exactly the number of total cells, but not the number of positive cells.

Objective The aim of this study was to evaluate the actual number of positive Ki-67 neuroendocrine tumor cells in fully automatic computerized modality, comparing the obtained results with those of the pathologist. **Methods** In this study, we evaluated 22 cases of PNET including: 5 adenomas, 4 and 13 borderline using a computerized high-resolution acquisition system (D-Sight, Menarini, Florence, Italy).

The entire histological section labeled by immune-histochemistry for the Ki-67 marker was acquired for each case. Positivity assessment was made by counting at least 2,000 tumor representative cells. The two groups of analyses were evaluated by t-test ($P < 0.05$ for significant results). **Results** Statistical analysis showed no significant differences when comparing the results obtained by computerized analysis and those obtained from pathologist. However, the computerized evaluation was rapid, reproducible and operator-independent. Furthermore, the D-Sight system was able to provide percentage grading of nuclear staining intensity. **Conclusion** Pathological grading for PNET is currently of fundamental importance to the setting of adjuvant therapy in carcinomas. The possibility to evaluate the Ki-67 value in a safe, rapid and reproducible way, could greatly enhance the work of the pathologist and oncologist within PNET. Furthermore, large scale studies are needed in order to take advantage of this technology routinely.