Proteomic tissue profiling for the improvement of grading of noninvasive papillary urothelial neoplasia.

In 2004, a novel grading system for papillary non-invasive bladder cancer was introduced; low grade (LG) and high grade (HG) in lieu of the former G1, G2, G3. This change allowed for increased reproducibility as well as diminished interobserver variability in histopathological grading among individual pathologists. Matrix Assisted Laser Desorption/Ionization Time of Flight Imaging Mass Spectrometry (MALDI TOF IMS) was evaluated as an automatic and objective tool to assist grading of urothelial neoplasms and to facilitate accuracy. To separate G1 (LG, n=27) and G3 (HG, n=21) papillary tumors MALDI TOF IMS was performed using an appropriate algorithm. Thereafter, the automatic assignment of a separate G2 (n=31) group was completed. G1 (LG) and G3 (HG) tumors were separated with an overall cross validation of 97.18%. G2 tumors indicated a true positive rate of 78.3% for LG and 87.5% for HG, respectively. MALDI TOF IMS is a powerful support tool to ascertain pathological diagnosis/grading.