Background: Identification of genetic markers may help to stratify Barrett’s esophagus (BE) patients into low and high risk groups. In previous studies we used DNA-fluorescent in situ hybridization (FISH) to assess several genetic abnormalities on brush cytology specimens of BE and EAC patients at the Academic Medical Center in Amsterdam.

Aim: To identify FISH markers with the potential to predict progression and for diagnosing HGD/EAC in BE patients.

Methods: We re-evaluated our FISH results on a total of 180 BE and EAC cases. FISH abnormalities with a low frequency in no dysplasia, but of which frequencies increased significantly with BE progression were designated as potentially prognostic, while those with a high frequency in particularly HGD and EAC were considered as “diagnostic.”

Results: Four markers consisting of probes for the chromosomes 7(CEP7) and 17(CEP17), and the loci (LSP) for the p53(17p13.1) and p16(9p21) genes, fulfilled the criteria as being potentially prognostic. The diagnostic probes had specificities between 88 to 100% and a sensitivity of 89% to detect HGD or EAC. This set consisted of CEP 7 and 17 and the LSP of the oncogenic loci for Her-2(17q11.2-12), c-myc (8q24.12) and 20q13

Conclusion: A FISH probe set consisting of CEP 7 and 17, and LSP p53 (17p 13.1), p16(9p21), Her-2/Neu(17q11.2-12), c-myc (8q24.12) and 20q13 has been designated as potentially prognostic and diagnostic. This set will be evaluated during follow up and on diverse other BE cohorts.