Multi-colour FISH in oesophageal adenocarcinoma-predictors of prognosis independent of stage and grade.

Abstract:
Oesophageal adenocarcinoma or Barrett's adenocarcinoma (EAC) is increasing in incidence and stratification of prognosis might improve disease management. Multi-colour fluorescence in situ hybridisation (FISH) investigating ERBB2, MYC, CDKN2A and ZNF217 has recently shown promising results for the diagnosis of dysplasia and cancer using cytological samples. To identify markers of prognosis we targeted four selected gene loci using multi-colour FISH applied to a tissue microarray containing 130 EAC samples. Prognostic predictors (P1, P2, P3) based on genomic copy numbers of the four loci were statistically assessed to stratify patients according to overall survival in combination with clinical data. The best stratification into favourable and unfavourable prognoses was shown by P1, percentage of cells with less than two ZNF217 signals; P2, percentage of cells with fewer ERBB2-than ZNF217 signals; and P3, overall ratio of ERBB2/-ZNF217 signals. Median survival times for P1 were 32 vs 73 months, 28 vs 73 months for P2; and 27 vs 65 months for P3. Regarding each tumour grade P2 subdivided patients into distinct prognostic groups independently within each grade, with different median survival times of at least 35 months. Cell signal number of the ERBB2 and ZNF217 loci showed
independence from tumour stage and differentiation grade. The prognostic value of multi-colour FISH-assays is applicable to EAC and is superior to single markers.