Detection of Chromosomal Alterations in Schistosome-Related Bladder Carcinoma in Egyptian Patients Using Multitarget FISH Assay in Urine

Introduction and Objectives: Assessing chromosomal alterations in chromosomes 3, 7, 17 and 9p21 using a multitarget fluorescence *in situ* hybridization (FISH) system, in schistosome-related bladder cancer as well as preneoplastic lesions and evaluating its prognostic value in follow-up of these patients.
Materials and Methods: Urine samples from 40 patients were evaluated. FISH was performed using the UroVysion™ kit (Vysis Inc., Downers Grove, IL, USA). Consecutive patients were assessed using FISH, both to evaluate those with a history of (transitional cell carcinoma) TCC or with suspicious symptoms, and the FISH results were compared with concurrent biopsy and cytological assessments.
Results: In all, 40 FISH tests from 40 patients were evaluated; 80% had a history of bladder cancer and 20% had no history. Of 32 patients with previous TCC, 22 had a recurrence; 16 of these had positive FISH results. Of the 40 FISH tests, 30/40 (75%) patients were positive (10 new diagnosed TCC and 16 of recurrent TCC, and 4 cases with no history of malignancy). FISH was positive and cytology negative in 8/30 (26.6%) of cases, and cytology was positive with a negative FISH for 1%. In all, FISH tests had concurrent biopsy data. Of the 32 cases histologically positive for TCC, 26 were FISH-positive, resulting in an overall sensitivity (95% confidence interval) of 75%. FISH detected 95% of cases with high-grade carcinoma, while only 10 of these 16 were positive by concurrent cytological assessment. FISH detected 70% and cytology detected 30% of low-grade lesions.
Conclusions: FISH analysis has a high sensitivity for detecting new cases of TCC, as well as recurrences. From the present data FISH is considerably more sensitive and only slightly less specific than cytology in diagnosing TCC. Therefore, we recommend FISH as a useful initial diagnostic tool in patients suspected of both new and recurrent TCC.