# The role of CISH method in detection of HER2 gene mutation in the transitional cell carcinoma of urinary bladder

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**Abstract: Objectives:** Evaluate the CISH method in detection HER2 amplification and to study the correlation clinicopathological data (age, sex, grade, and stage) of patients with of transitional cell carcinoma urinary bladder with HER2 gene amplification.

**Design and Methods:** This study is included 50 patient with bladder cancer (male 35 and female 15) with additional 20 control group (10 cases is positive control and 10 cases is negative control). 50 patients who are diagnosed transitional cell carcinoma of bladder and their biopsies of bladder (taken from endoscopic biopsy or cystectomy). Then, paraffin-embedding procedure was prepared on tissues biopsy and then, hematoxylin and eosin staining (H. and E. staining) procedure was done. Finally, manual CISH is done on both control cases(positive and negative cases) and bladder cancer blocks. This CISH method detect her2 amplification according to ASCO/CAP/2013 scoring system.

**Results:** The result showed that age group 61-70 years is the highest positive HER2 amplification (64.7%) among other age groups 51-60 years (11.8%) and 71-80 years old (23.5%), there is a significant association between these age groups with HER2 amplification , $p \leq 0.05$. Sex group displayed that 52.9% of male and 47.1% of female who had positive HER2 amplification and there is no significant association between sex groups with HER2 amplification, $p > 0.05$.Also, positive HER2 amplification is highest in grade 3 (88.2%) of transitional cell carcinoma when compared to grade 2 (11.8) and grade 1 (0%) and there is significant association between cancer grading system with HER2 amplification, $p \leq 0.05$. T2 and T1 of staging cancer system showed 82.4% and 17.6% positive HER2 amplification respectively with a significant correlation between them. Also, other result that the histological types of transitional cell carcinoma revealed 88.2% and 11.8% (positive HER2 amplification) of papillary and flat shape respectively with a significant correlation between them.

**Conclusion:** HER-2\neu amplification was significant correlated with the high grade and high stage of bladder carcinoma indicating that HER-2\neu positive tumors are biologically aggressive and associated with bad prognosis.

**Key words:** transitional cell carcinoma of urinary bladder, HER2 gene, CISH method.

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