The IAC Yokohama System for Reporting Breast Cytopathology – A Retrospective Cytohistological Study: A South African Single Institutional Perspective

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Introduction: The Yokohama System was developed in 2016 for the reporting of fine needle aspiration biopsies (FNAB). The system defines five categories, each with a descriptive term, a definition, the rate of malignancy, and the proposed management for the category. This study evaluated the use and accuracy thereof as used by cytopathologists at Tygerberg Hospital.

The aim was to determine the frequency of distribution of each diagnostic category of the Yokohama system for reporting breast FNAB cytology, to determine the rate of malignancy associated with categories II - V, and to assess the correlation of cytology and histopathology to determine the diagnostic yield of the FNAB for a specific year.

Methods: A retrospective, quantitative, longitudinal laboratory-based study was done on available data from 1 July 2021 to 30 June 2022 at Tygerberg Hospital.(TBH) Inclusion criteria: adult females between the ages of 18 and 90 years of age who had an FNAB for a breast mass lesion and/or axillary lymph node with corresponding histology proving breast carcinoma. The National Health Laboratory Service (NHLS) database and records from the Breast Clinic of TBH were utilized. Statistical analysis was done with Department of Epidemiology and Biostatistics. The study was approved by the Health Research Ethics Committee at the University of Stellenbosch (HREC reference number: U23/01/218)

Results: One thousand eight hundred and fifty two FNAs were identified: 1094 met the criteria for inclusion. The category distribution for Yokohama II to V was 35%, 40%, 5%, 6% and 14% respectively. The rate of malignancy (ROM) as calculated for each category was 2% for II (benign) 49% for III (atypical, likely to be benign), 85% for IV (suspicious for malignancy) and V (malignant) was 97%. The sensitivity, specificity, positive predictive value, and negative predictive value were 88%, 97%, 94% and 95% respectively.

Yokohama category	Number	Malignancy confirmed (number)	ROM	Expected ROM*
II	735	14	2%	1-3%
III	51	25	49%	17-23%
IV	93	79	85%	79-92%
V	215	209	97%	99-100%

Table 1: Rate of malignancy for each Yokohama category II-V. *Expected ROM based on meta-analysis by Nikas et al

Conclusion: Fine needle biopsy of the breast remains a rapid, cost-effective procedure with high sensitivity and specificity to make an accurate diagnosis of both benign and malignant cases with minimal complications.