IAC Yokohama system for reporting breast fine-needle aspiration biopsy cytology

BACKGROUND

The development of this system began with a meeting, sponsored by the International Academy of Cytology (IAC), of a group of cytopathologists with an interest in breast fine needle aspiration biopsy cytology at the International Congress of Cytology in Yokohama in May 2016. The System defines five categories for reporting breast cytology, each with a clear descriptive term for the category, a definition, a risk of malignancy and a suggested management algorithm. The System is intended for global use, is based on cytomorphology and includes key diagnostic cytological criteria for each of the many lesions and tumours found in the breast. The System emphasizes that biopsy and smear making techniques of a high standard are essential to optimize quality and enhance breast fine-needle aspiration biopsy (FNAB) diagnosis.

The five categories are:

- Insufficient/Inadequate
- Benign
- Atypical
- Suspicious of malignancy.
- Malignant

The standardized structured report should state one of these five descriptive terms as a diagnostic heading, then include a brief cytological description, noting the presence or absence of key diagnostic features, and follow with a conclusion or summary providing as specific a diagnosis of the lesion as possible. If the diagnosis is uncertain, the most likely differential diagnoses should be provided. A category number, 1,2,3,4 or 5 for insufficient, benign, atypical, suspicious of malignancy and malignant respectively, can be stated in the body of the report to assist with quality assurance and research, but not as a replacement for the actual diagnosis or the descriptive category terminology.

Definition INSUFFICIENT/INADEQUATE

The smears are too sparsely cellular or too poorly smeared or fixed to allow a cytomorphological diagnosis.

A laboratory and its cytopathologists should select either ‘insufficient’ or ‘inadequate’ and use this term consistently. FNAB smears are regarded as adequate or inadequate based on the assessment of the material on the slides. This may not require epithelial material to be present if the cytological findings correlate with the clinical and imaging findings (the triple test).

If there is a mass lesion on palpation or imaging, which does not decrease in size on FNAB, the presence of seven tissue fragments, each of 20 or more epithelial cells, are suggested as a measure of adequacy. If there are any atypical features or necrosis, even if there are fewer than 7 tissue fragments, the case should be reported as atypical. The reason for the categorization as insufficient/inadequate should always be stated in the report.

Definition BENIGN
Unequivocally benign cytological features, which may or may not be diagnostic of a specific benign lesion.

**Definition ATYPICAL**

The presence of cytological features seen predominantly in benign processes or lesions, but with the addition of some features that are uncommon in benign lesions and which may be seen in malignant lesions.

The decision was made to include an ‘atypical’ category in order to maximize the negative predictive value (NPV) of a ‘benign’ diagnosis and a ‘suspicious of malignancy’ category to maximize the positive predictive value (PPV) of a ‘malignant’ diagnosis. The majority of ‘atypical’ cases will be benign proliferative lesions and the majority of suspicious lesions will be in situ or low grade carcinomas.

**Definition SUSPICIOUS of MALIGNANCY**

The presence of some cytomorphological features which are usually found in malignant lesions, but with insufficient malignant features, either in number or quality, to make a definitive diagnosis of malignancy. The type of malignancy suspected should be stated whenever possible.

Low-grade Ductal carcinoma in situ (LGDCIS) most typically produces highly cellular smears, a pattern of large tissue fragments showing a cribriform, micropapillary or papillary architecture, a variable but often marked increase in dispersed single cells showing mild to moderate nuclear atypia, a greatly reduced number or total lack of myoepithelial cells associated with the epithelial tissue fragments, and scanty or absent bare bipolar nuclei in the background. Recognition of these features prevents undercalling LGDCIS as a proliferative lesion, and overcalling LGDCIS as invasive carcinoma. Although controversial in relation to the specific diagnosis of LGDCIS, the categorization of these lesions as ‘suspicious of malignancy’ is recommended. The diagnosis of high-grade ductal carcinoma in situ (HGDCIS) by FNAB is also controversial. FNAB cannot diagnose HGDCIS to the exclusion of invasive carcinoma. In FNAB cytology smears HGDCIS has been reported to be associated with necrosis, calcifications and high grade nuclear atypia seen in dispersed single cells and in both small and larger crowded epithelial tissue fragments. The smears are often of low cellularity. These findings cannot exclude high grade invasive carcinomas.

**Definition MALIGNANT**

A malignant cytological diagnosis is an unequivocal statement that the material is malignant, and the type of malignancy identified should be stated whenever possible.

REFERENCES


[https://doi.org/10.1007/978-3-030-26883-1](https://doi.org/10.1007/978-3-030-26883-1)