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Malignant Upgrade of Atypical Ductal Hyperplasia in Chinese Population: Experience in a Tertiary Centre over an 11-year period

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Objectives

This study aimed to determine the upgrade rate of atypical ductal hyperplasia (ADH) diagnosed by image-guided breast biopsy in the Chinese population, and to identify radiological and clinico-pathological factors associated with upgrade to malignancy upon surgical excision.

Materials and Methods

This retrospective study included consecutive cases of ADH diagnosed by image-guided core biopsy with subsequent surgical excision at a Hong Kong tertiary hospital from 2013 to 2024. Imaging, clinical, and pathological features were reviewed. Upgrade associations were analysed using Chi-square or Fisher's exact test ($p \leq 0.05$ as significant).

Data Collection and Analysis

Clinical

- Demographics: age, gender, menopausal status
- Personal and family history of cancer
- Risk factors: Hormonal use

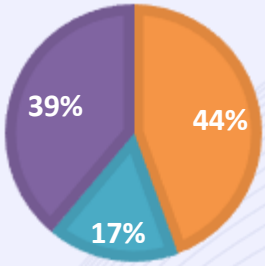
Radiological and Procedural

- Imaging features and BI-RADS scores
  - Mammogram: presence of mass, calcifications, architectural distortion, asymmetry
  - Ultrasound: presence of mass, size, margin, echo pattern, vascularity
  - Lesion location and laterality
- Biopsy techniques:
  - Ultrasound or stereotactic guidance
  - Needle gauge
  - Number of core samples obtained

Pathological

- ADH features and lesion size
- Presence of coexisting lesions and associated findings
- Receptor status (ER, PR, HER2 if tested)

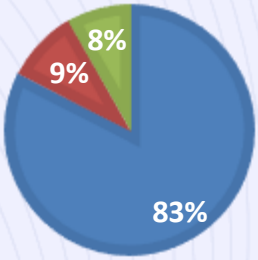
Results



- Ductal carcinoma in situ
- Invasive carcinoma
- BI-RADS ≥ 4B lesions

❖ 97 lesions in 95 women with mean age of 57.4 years were included using 3 kinds of biopsy techniques:

- 14-gauge ultrasound-guided core biopsy
- 9-gauge stereotactic vacuum-assisted core biopsy
- 14-gauge stereotactic-guided core biopsy



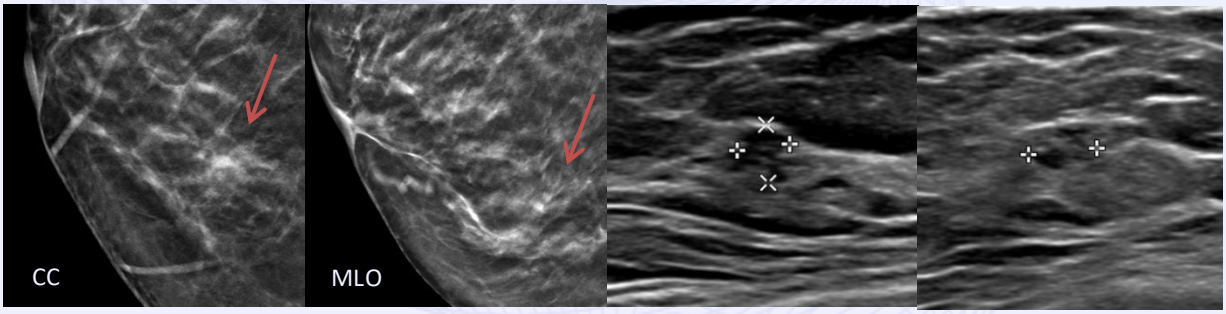
❖ Upgrade rate was 45.4% (44/97; 95% CI: 35.6%-55.4%): 32 ductal carcinomas in situ and 12 invasive carcinomas.

❖ 13 lesions were BI-RADS category 4b or above.

Sonographic Characteristics			p value
Presence of Mass	35 (67.3%)	39 (86.7%)	0.032
Hypoechogenicity	33 (63.5%)	25 (55.6%)	0.530
Non-circumscribed Margin	8 (15.4%)	10 (22.2%)	0.440
Hypervascularity	9 (17.3%)	6 (13.3%)	0.779
Mammographic Characteristics			p value
Presence of Mass	4 (7.7%)	11 (24.4%)	0.027
Asymmetry	2 (3.8%)	3 (6.7%)	0.661
Architectural Distortion	2 (3.8%)	6 (13.3%)	0.139
Microcalcifications	14 (26.9%)	15 (33.3%)	0.513

❖ Mass on mammograms and ultrasound was associated with malignancy upgrade.

❖ Other radiological features, patient age, family history, and ADH histological patterns showed no significant association.



Mammogram and ultrasound images from the same patient with biopsy-proven ADH demonstrating a suspicious mass on both modalities. Pathology following surgical excision confirmed upgrade to malignancy.

Conclusion

Nearly half of biopsy-diagnosed ADH upgraded to malignancy in this Hong Kong cohort. Surgical excision is recommended for definitive diagnosis, especially for masses on imaging. Comprehensive imaging evaluation is critical for optimal patient selection and surgical planning.

References

1. Li et al., Eur Radiol 2025. 2. Chae et al., World J Surg Oncol 2009;7:77. 3. Youk et al., AJR 2009;193:839-44.