Insights from real world evaluation of an AI tool within the breast screening program - a single centre experience.

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INTRODUCTION

Major advances have been made since the introduction of the NHS breast screening programme in 1988 with artificial intelligence (AI) now at the forefront. We sought to evaluate the performance of an AI tool as an independent reader in our department in mammography detected cancers.

6 MONTH period

14,824 mammograms
110 cancers

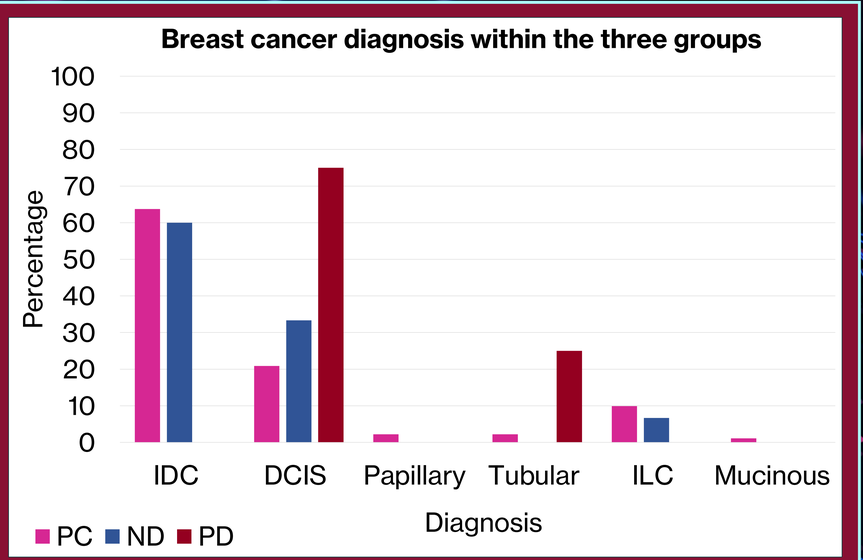
− 1 exclusion (not read by AI)

Split into 3 groups

1. Detected by AI and humans (Positive Concordance, PC)
2. Detected by humans alone (Negative Discordance, ND)
3. Detected by AI alone (Positive Discordance, PD)

RESULTS

	PC group (AI and Humans)	ND group (Humans only)	PD group (AI only)
Cancers identified (number)	91	15	4
Age (mean)	62	62	62
Mean lesion size (mm)	28	28	38
Breast Density (%)	A = 5 **B = 64** C = 30 D = 1	A = 7 **B = 60** C = 33 D = 0	A = 0 **B = 75** C = 25 D = 0
Lesion visible to human eye on both views (%)	90	40	100
Additional regions of interest circled by AI (Range)	1-5	N/A	1



CONCLUSION

This single centre evaluation highlights the potential value of humans and AI working together. We found cancer detection was increased by supplementing standard breast screening with an extra read from AI, even though we were restricted to only recalling potential cases which would fall into the group of category 3 interval cancers. Further work is warranted to develop localisation representations and tailor them to the deployment context. Overall, the promising results offer reassurance that patients can safely benefit from the use of AI as an extra reader in subsequent larger-scale evaluations and future deployments.