NEWS RELEASE 22-DEC-2022

THE LANCET: Treating COVID-19 infection with molnupiravir does not decrease deaths or hospital admission in high-risk, vaccinated patients, but can lead to quicker recovery

Peer-Reviewed Publication

THE LANCET


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ARTICLES | ONLINE FIRST
Molnupiravir plus usual care versus usual care alone as early treatment for adults with COVID-19 at increased risk of adverse outcomes (PANORAMIC): an open-label, platform-adaptive randomised controlled trial
Prof Christopher C Butler, FMedSci * • Prof F D Richard Hobbs, FMedSci * • Oghenekome A Gbinigie, DPhil •
Prof Najib M Rahman, DPhil • Gail Hayward, DPhil • Prof Duncan B Richards, DM • et al. Show all authors • Show footnotes
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(which will be reported separately). 12 529 participants from the molnupiravir plus usual care group, and 12 525 from the usual care group were included in the primary analysis population. The mean age of the population was 56·6 years (SD 12·6), and 24 290 (94%) of 25 708 participants had had at least three doses of a SARS-CoV-2 vaccine. Hospitalisations or deaths were recorded in 105 (1%) of 12 529 participants in the molnupiravir plus usual care group versus 98 (1%) of 12 525 in the usual care group (adjusted odds ratio 1·06 [95% Bayesian credible interval 0·81–1·41]; probability of superiority 0·33). There was no evidence of treatment interaction between subgroups. Serious adverse events were recorded for 50 (0·4%) of 12 774 participants in the molnupiravir plus usual care group and for 45 (0·3%) of 12 934 in the usual care group. None of these events were judged to be related to molnupiravir.

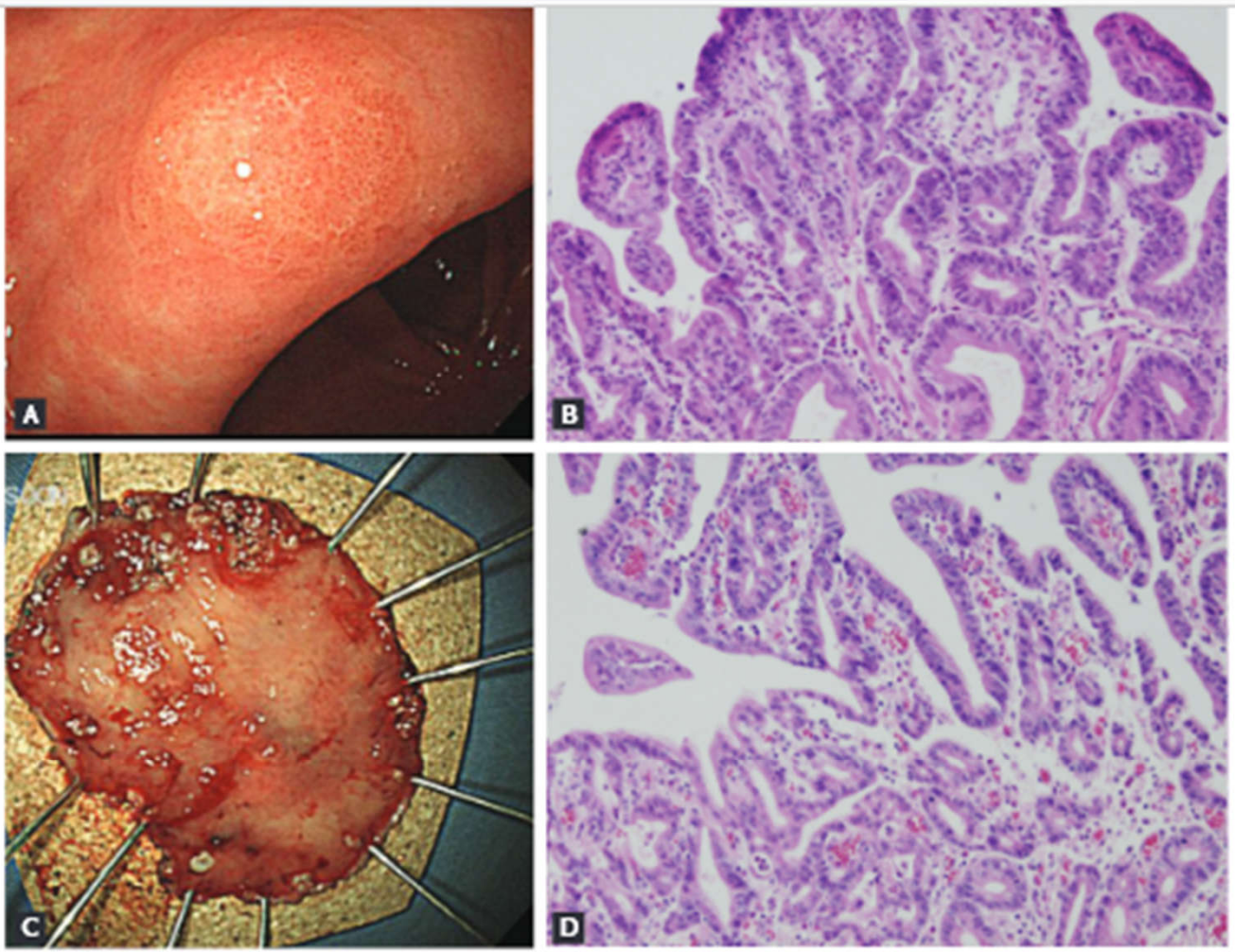

Figure 1. A lesion whose diagnosis was upgraded from gastric low-grade dysplasia to early gastric cancer after endoscopic resection. (A) Endoscopic findings before endoscopic resection show a 0.6 × 0.5 cm superficial elevated mass at the lesser curvature of the antrum. (B) Histologic features of low-grade dysplasia in the initial forceps biopsy specimen (H&E, ×200). (C) The endoscopic submucosal dissection specimen (3.7 × 2.7 cm). (D) Histologic features of the resected specimen. Moderately differentiated tubular adenocarcinoma arising from a tubular adenoma is evident. The tumor was 0.5 × 0.4 cm in size (H&E, ×200).

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MINIREVIEWS

Confusion and prospects for carcinogenesis of gastric adenoma and dysplasia: What is the correct answer currently?

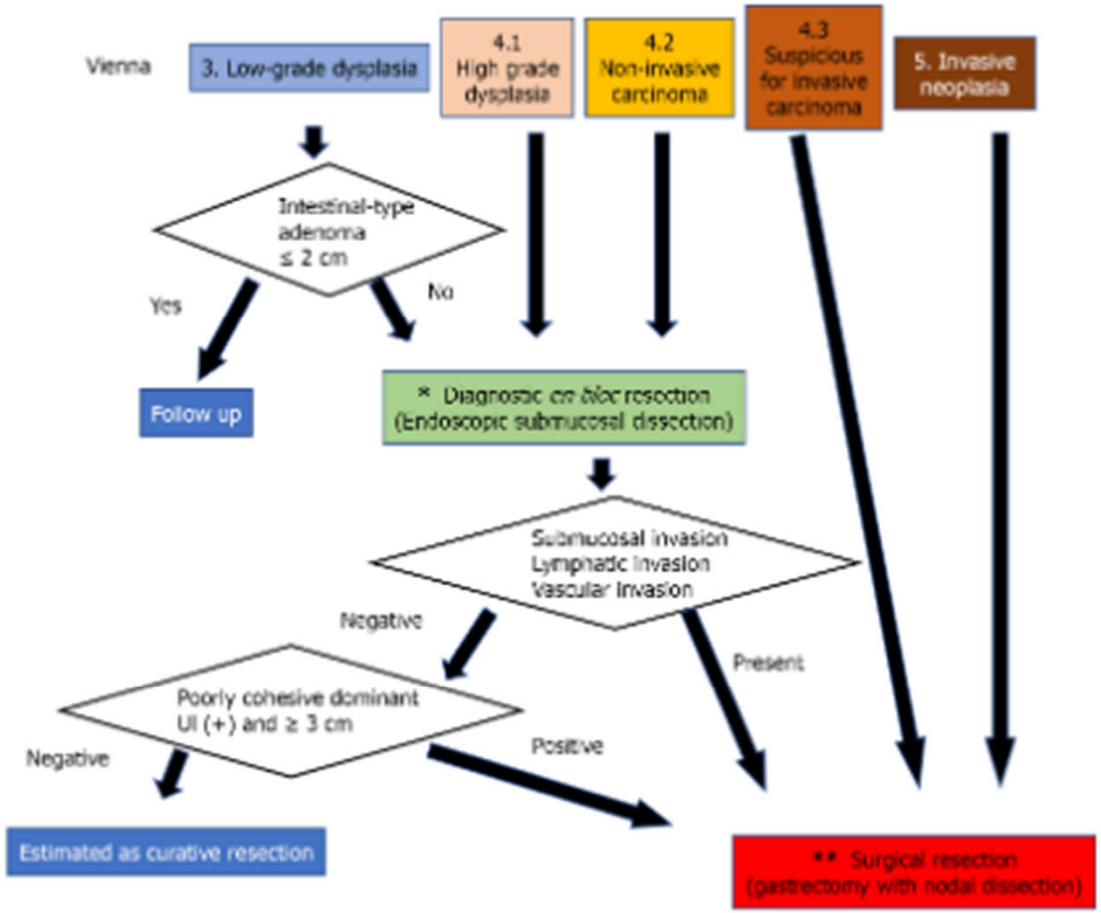

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Figure 3 The strategy for diagnosis, staging, and treatment of gastric dysplasia and cancer according to the Vienna classification. Since

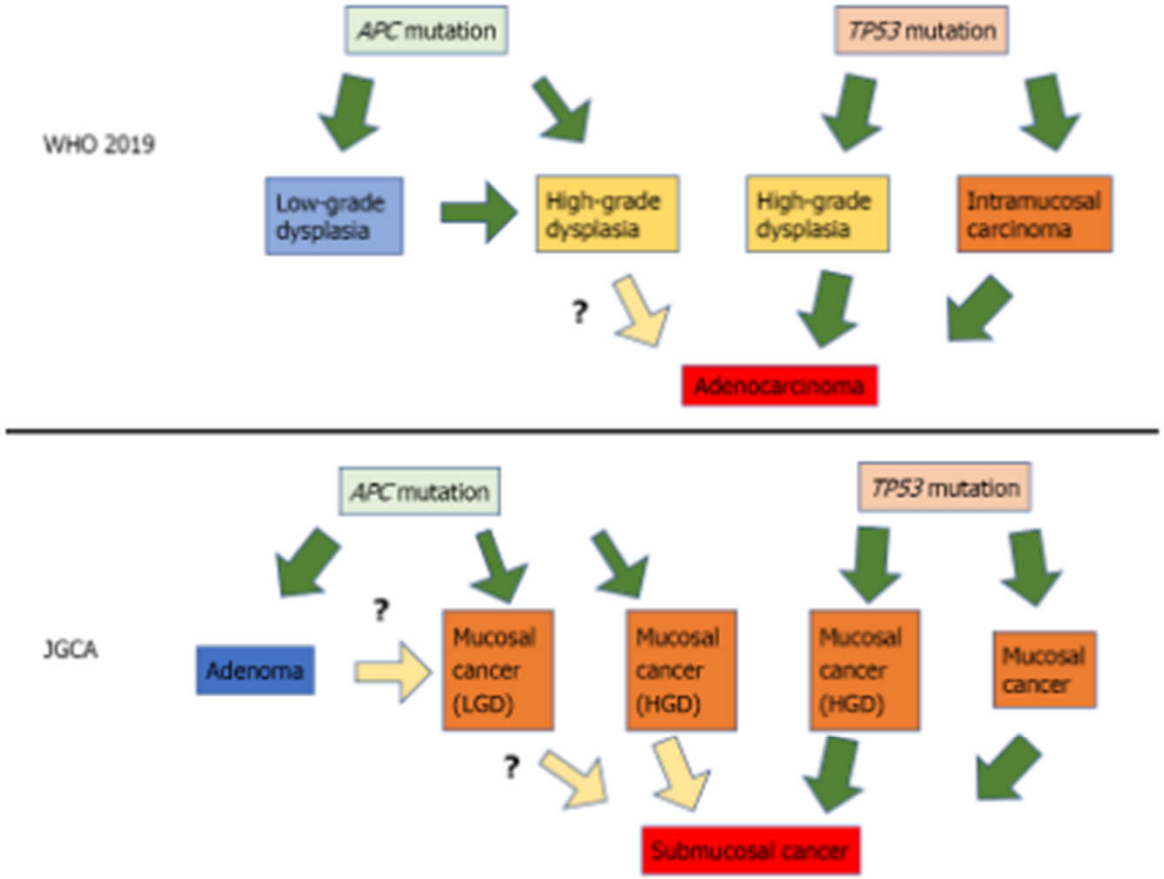

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Figure 2 The diagram assuming the relationship between gene mutations and gastric carcinogenesis. Superficial gastric tumors can be roughly divided into two types by specific gene mutations: The *APC* mutation type and the *TP53* mutation type. *APC*-type tumors have low malignancy and develop into low-grade dysplasia, whereas *TP53*-type tumors have high malignancy and are considered cancerous even if small. JGCA: Japanese Gastric Cancer Association; HGD:

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Immunology of viral hepatitis

Margaret James Koziel, MD

DOI: https://doi.org/10.1016/S0002-9343(96)90018

IMMUNOLOGY OF HEPATITIS B VIRUS AND HEPATITIS C VIRUS INFECTION

Barbara Rehermann and Michelina Nascimbeni

CONCLUSION

Gastric carcinogenesis occurs mostly *de novo*, and the adenoma-carcinoma sequence does not appear to be the main pathway of carcinogenesis. Superficial gastric tumors can be roughly divided into the *APC* mutation type and the *TP53* mutation type, which are mutually exclusive. For lesions diagnosed as category 3 or 4 in the Vienna classification, it is desirable to perform ESD for accurate diagnosis and staging. If there is lymphovascular or submucosal invasion, additional surgical treatment of gastrectomy with lymph node dissection is required.

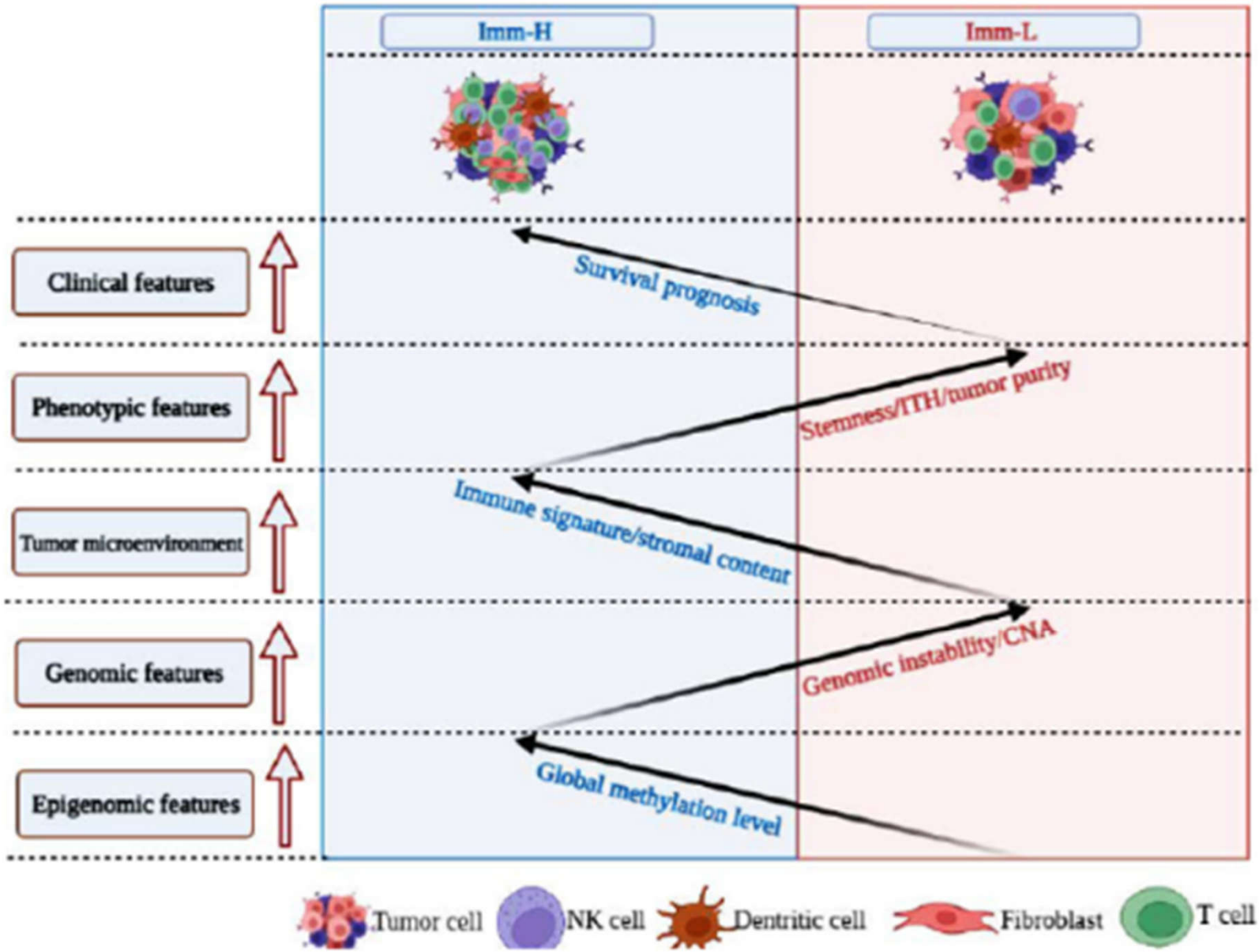
form of enterically transmitted and one other parenterally transmitted hepatotropic virus, but characterization of these viruses is still preliminary. The five hepatotropic viruses have unique structures, yet all the share the property of inducing hepatocellular damage, whether through direct cytotoxicity or through induction of immune mechanisms that lead to hepatocellular necrosis. Advances in molecular biology in the past decade have enabled researchers to understand much about the structure, mechanisms of replication, and viral life cycle of each of these viruses, and successful vaccines have been developed for hepatitis A and B. However, many problems remain unsolved, including which immune system factors are important defenses against these viral infections, which components of the immune system are necessary for a successful vaccine, and what allows some viruses, such as hepatitis B and hepatitis C virus, to become persistent and lead to chronic liver disease.

Basic Study

Immunological classification of hepatitis B virus-positive hepatocellular carcinoma by transcriptome analysis

Sheng-Wei Li, Li-Fan Han, Yin He, Xiao-Sheng Wang

Core Tip: First, for the first time, we identified immune-specific subtypes of hepatitis B virus (HBV) + hepatocellular carcinoma (HCC) based on immune signature scores and demonstrated that this new subtyping method was reproducible in three different datasets. Second, our subtyping method captures the comprehensive heterogeneity of HBV+ HCC in the tumor microenvironment, genomic integrity, protein expression profiles, DNA methylation profiles, tumor stemness, intratumor heterogeneity, and clinical outcomes. Third, our data suggest that it is copy number alterations but not tumor mutations responsible for the different immunity between the "hot" and "cold" tumor subtypes in HBV+ HCC. Finally, our identification of the immune-specific subtypes of HBV+ HCC may provide new insights into the tumor biology and identify the HBV+ HCC patients beneficial from immunotherapy.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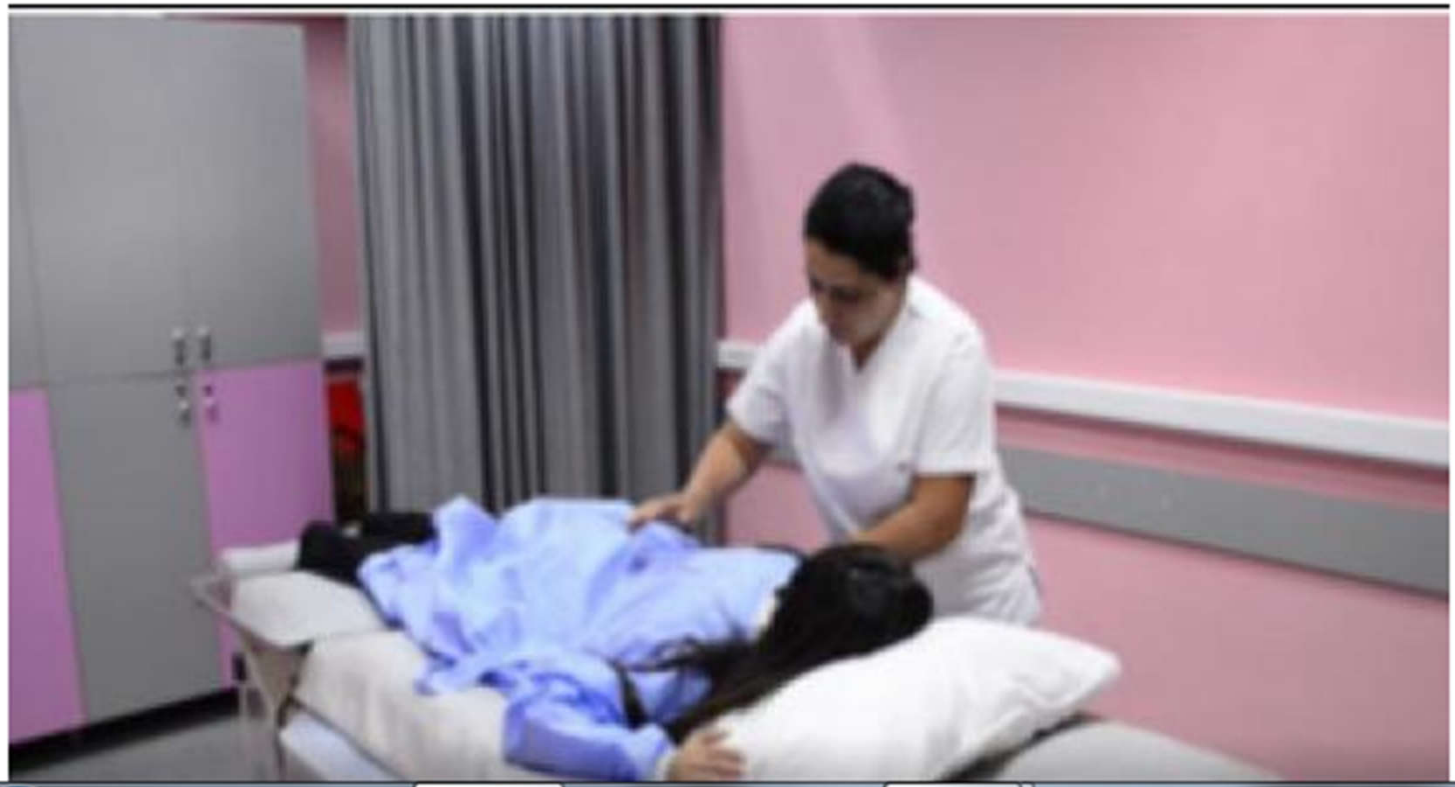
Clinical features
Phenotypic features
Tumor microenvironment
Genomic features
Epigenomic features
Survival prognosis
Stemness/TTH/tumor purity
Immune signature/stromal content
Genomic instability/CNA
Global methylation level
Tumor cell
NK cell
Dentritic cell
Fibroblast
T cell

Microwave breast imaging: A non-invasive, non-ionizing emerging technology for breast cancer screening

Hannah Murphy | *December 21, 2022* | *Breast Imaging*



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Original Investigation

Microwave Breast Lesion Classification – Results from Clinical Investigation of the SAFE Microwave Breast Cancer System

Aleksandar Janjic, Ibrahim Akduman, Mehmet Cayoren, Onur Bugdayci, Mustafa Erkin Aribal

Rationale and Objectives: Microwave breast cancer imaging (MWI) is an emerging non-invasive technology used to clinically assess the internal breast tissue inhomogeneity. MWI utilizes the variance in dielectric properties of healthy and cancerous tissue to identify anomalies inside the breast and make further clinical predictions. In this study, we evaluate our SAFE MWI system in a clinical setting. Capability of SAFE to provide breast pathology is assessed.

Materials and Methods: Patients with BI-RADS category 4 or 5 who were scheduled for biopsy were included in the study. Machine learning approach, more specifically the Adaptive Boosting (AdaBoost) model, was implemented to determine if the level of difference between backscattered signals of breasts with the benign and malignant pathological outcome is significant enough for quantitative breast health classification via SAFE.

Results: A dataset of 113 (70 benign and 43 malignant) breast samples was used in the study. The proposed classification model achieved the sensitivity, specificity, and accuracy of 79%, 77%, and 78%, respectively.

Conclusion: The non-ionizing and non-invasive nature gives SAFE an opportunity to impact breast cancer screening and early detection positively. Device classified both benign and malignant lesions at a similar rate. Further clinical studies are planned to validate the findings of this study.

Key Words: breast cancer; breast lesion classification; machine learning; SAFE.

Biopsy results were used to compare the sensitivity, specificity and accuracy of the diagnoses derived from imaging.

For differentiating between benign and malignant lesions, the classification model achieved a sensitivity, specificity and accuracy of 79%, 77% and 78%, respectively. Lesions as small as 4 mm were ably detected using the device as well, suggesting utility for identifying cancers in earlier stages.

The MWI-based SAFE device was found to be more effective in younger patients. Outside of age, breast density also impacted detection rates, with higher density yielding lower detection of malignant lesions.

The researchers noted that the device is still under development, but that multicenter trials are in the works to test its clinical utility as a screening tool.

Learn more in *Academic Radiology*.

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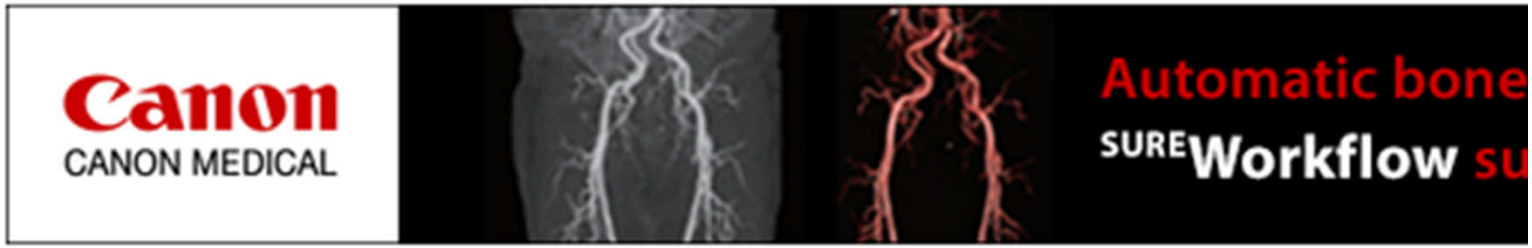

PCCT outperforms conventional CT for pulmonary embolism diagnosis

By Kate Madden Yee, AuntMinnie.com staff writer

December 27, 2022 -- Photon-counting CT (PCCT) pulmonary angiography imaging outperforms conventional CT for diagnosing pulmonary embolism (PE) -- cutting radiation dose in half, according to research presented at the RSNA meeting in Chicago.

"Photon-counting detector CT offers the possibility to gain spectral information from high-pitch CT pulmonary angiography scans which is particularly beneficial in patients with suspected PE, who frequently present with dyspnea," Pauline Pannenbecker of Uniklinikum Würzburg in Germany told session attendees.

Acute PE is a potentially lethal condition, and timely diagnosis and treatment is key to optimizing outcomes, Pannenbecker said. CTPA is the reference standard for diagnostic workup of suspected PE; dual-energy CT offers even more benefit because it produces spectral information, she noted. PCCT is a multi-energy technique that offers this spectral information but at a lower radiation dose, according to Pannenbecker.

Performance comparison for identifying pulmonary embolism, conventional CT, and PCCT			
Measure	**Conventional CT**	**PCCT**	**p-value**
Dose length product (mGy*cm)	181.7	80	< 0.001
Effective dose (mSv)	3.3	1.4	< 0.001
Size specific dose estimate (mGy)	5.7	3.1	< 0.001

"Even though we halved the contrast medium dose and radiation dose compared to standard dual-energy [conventional CT] protocol, [we maintained] good to excellent diagnostic imaging quality in nearly 100% of cases," she concluded.

THE END