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ORIGINAL RESEARCH

Predictive Value of Preoperative Serum AFP, CEA, and CA19-9 Levels in Patients with Single Small Hepatocellular Carcinoma: Retrospective Study

Leijuan Gan [ID]*, Shaohua Ren [ID]*, Mengran Lang*, Guangtao Li, Feng Fang, Lu Chen, Yayue Liu, Ruyu Han [ID], Kangwei Zhu, Tianqiang Song [ID]

Liver Cancer Center, Tianjin Medical University Cancer Institute & Hospital, National Clinical Research Center for Cancer, Key Laboratory of Cancer Prevention and Therapy, Tianjin's Clinical Research Center for Cancer, Tianjin, 300060, People's Republic of China

*These authors contributed equally to this work

Correspondence: Tianqiang Song, Liver Cancer Center, Tianjin Medical University Cancer Institute & Hospital, National Clinical Research Center for Cancer, Key Laboratory of Cancer Prevention and Therapy, Tianjin's Clinical Research Center for Cancer, Tianjin, 300060, People's Republic of China, Email songtianqiangtj@163.com

Purpose: This study aimed to explore the relationship between the tumor marker score (TMS) and the postoperative recurrence of single small hepatocellular carcinoma (HCC).

Patients and Methods: A total of 409 patients with one resectable HCC with a diameter of 3 cm or less who visited Tianjin Medical University Cancer Institute & Hospital from January 2010 to December 2014 were included in this study. Their alpha-fetoprotein (AFP), carcinoembryonic antigen (CEA), and carbohydrate antigen 19-9 (CA19-9) levels were classified into low and high groups using X-tile software. Each patients' TMS was calculated as the sum of each tumor marker (low = 0; high = 1).

Results: A total of 142 patients were classified as TMS0, 171 as TMS1, and 96 as TMS2. Kaplan–Meier analysis illustrated that TMS could divide the patients into groups with remarkably different prognoses, and the patients with high TMS had worse recurrence-free survival (RFS) than those with low TMS. Multivariate analysis showed that TMS, age, and HBeAg positive were the independent predictors of RFS rate. Subgroup analysis revealed that high TMS was a stable risk factor relative to TMS0. Receiver operating curves showed that the 1-, 3-, and 5-year area under curve (AUC) values of TMS were 0.698, 0.662, and 0.673, respectively. The AUC of TMS was higher than that of other common prognostic models in time-dependent receiver operating curve.

Conclusion: TMS was an independent prognostic factor for the postoperative recurrence of a single small HCC and can provide a well-discriminated risk stratification, thus contributing to prognostic prediction and adjuvant therapeutic development.

Keywords: hepatocellular carcinoma, recurrence-free survival, tumor marker score, alpha-fetoprotein, carcinoembryonic antigen, carbohydrate antigen 19-9
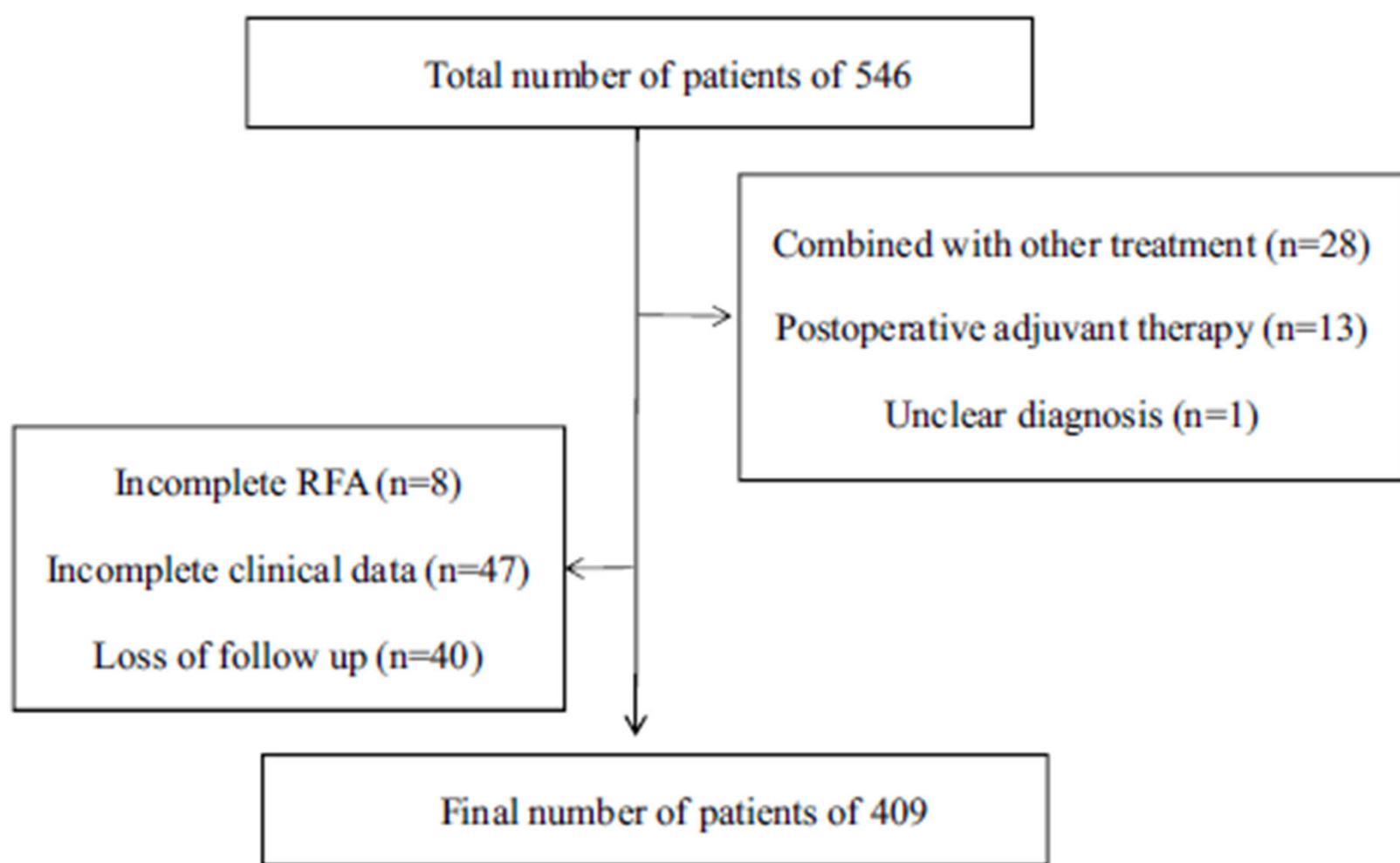
Figure 1 Flowchart of patient selection.

Several limitations exist in our research. First, given its retrospective nature, this study was inevitably exposed to selection bias. Accordingly, the cohort is heterogeneous in baseline values, such as platelet count, ALBI grade, and liver cirrhosis. Second, this research is a single-centre study. A large-scale multiple-centre study is necessary to verify our conclusions. Moreover, only a small number of patients in the RFA group were confirmed by biopsy, thus possibly affecting the outcome of treatment. Finally, though we pointed out that TMS could accurately predict the recurrence of a single small HCC after surgery, we failed to make internal and external validations. Despite these limitations, we believe this study provides valuable insights into the current trend of predicting the prognosis of patients with a single small HCC.

In conclusion, we developed a TMS combining AFP, CEA, and CA19-9 that can accurately predict recurrence in patients with a single small HCC undergoing RFA, AR, or NAR. The results contribute to the decision-making in daily clinical practice. The TMS is based on three ubiquitously available laboratory values, making it objective and widely applicable. However, a large-scale prospective clinical study is warranted to verify our conclusions.

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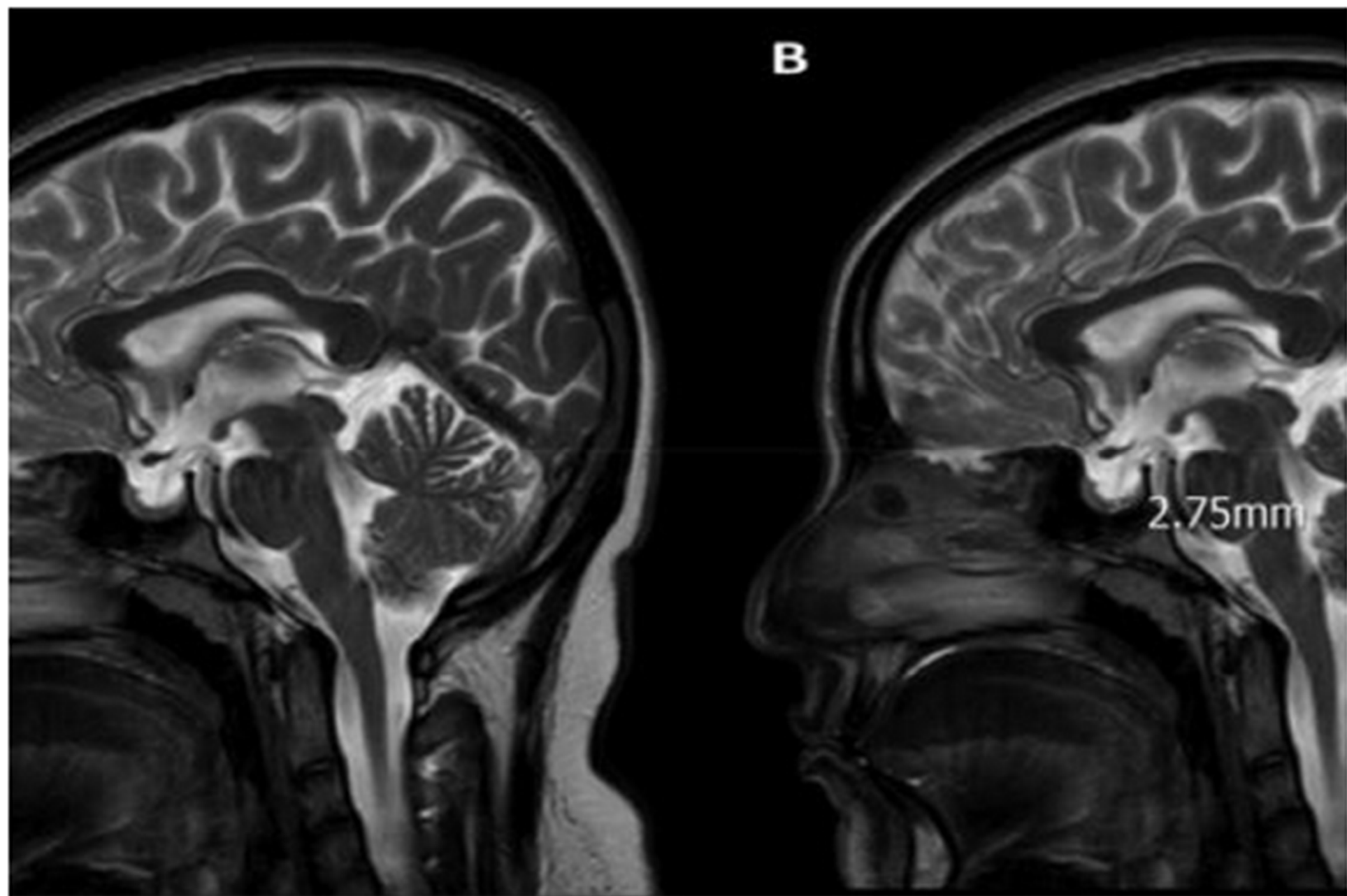
Accuracy and Reliability of Magnetic Resonance Imaging in The Diagnosis of Idiopathic Intracranial Hypertension

Beyza Nur KUZAN • Can ILGIN • Taha Yusuf KUZAN • ... Pınar KAHRAMAN KOYTAK • Kayıhan ULUÇ

Nuri Çagatay ÇİMŞİT • Show all authors

Results

A total of 98 patients, 49 cases and 49 controls, were included in the study. Lateral ventricular index had the highest AUC value (0.945) for prediction of disease group followed by sella height category (AUC=0.915) and optic nerve tortuosity (AUC=0.855) According to the multivariate model we developed, caudate index (OR=0.572, 95% CI 0.329-0.996), lateral ventricle index (OR=3.969, 95% CI 1.851-8.509) and bilateral optic nerve tortuosity (OR=22,784, 95% CI 2.432-213.450) were significant predictors for disease group.

Conclusion

Tortuosity in the optic nerve, lateral ventricular index and caudate index can be used as MRI parameters supporting the diagnosis of IIH in clinically suspicious cases. A holistic approach to the clinical and radiological findings of the cases in the diagnosis of IIH can prevent overdiagnosis by enabling early correct diagnosis.

Most bowel cancer symptoms do not indicate colorectal cancer and polyps: a systematic review

Barbara-Ann Adelstein[1,6*], Petra Macaskill[2], Siew F Chan[3], Peter H Katelaris[4] and Les Irwig[5]

Background: Bowel symptoms are often considered an indication to perform colonoscopy to identify or rule out colorectal cancer or precancerous polyps. Investigation of bowel symptoms for this purpose is recommended by numerous clinical guidelines. However, the evidence for this practice is unclear. The objective of this study is to systematically review the evidence about the association between bowel symptoms and colorectal cancer or polyps.

Methods: We searched the literature extensively up to December 2008, using MEDLINE and EMBASE and following references. For inclusion in the review, papers from cross sectional, case control and cohort studies had to provide a 2×2 table of symptoms by diagnosis (colorectal cancer or polyps) or sufficient data from which that table could be constructed. The search procedure, quality appraisal, and data extraction was done twice, with disagreements resolved with another reviewer. Summary ROC analysis was used to assess the diagnostic performance of symptoms to detect colorectal cancer and polyps.

Results: Colorectal cancer was associated with rectal bleeding (AUC 0.66; LR+ 1.9; LR- 0.7) and weight loss (AUC 0.67, LR+ 2.5, LR- 0.9). Neither of these symptoms was associated with the presence of polyps. There was no significant association of colorectal cancer or polyps with change in bowel habit, constipation, diarrhoea or abdominal pain. Neither the clinical setting (primary or specialist care) nor study type was associated with accuracy. Most studies had methodological flaws. There was no consistency in the way symptoms were elicited or interpreted in the studies.

Conclusions: Current evidence suggests that the common practice of performing colonoscopies to identify cancers in people with bowel symptoms is warranted only for rectal bleeding and the general symptom of weight loss. Bodies preparing guidelines for clinicians and consumers to improve early detection of colorectal cancer need to take into account the limited value of symptoms.

Clinical Studies

Faecal immunochemical test for patients with 'high-risk' bowel symptoms: a large prospective cohort study and updated literature review

Helga E. Laszlo [1,8 ✉], Edward Seward[1,2], Ruth M. Ayling[3], Jennifer Lake[3], Aman Malhi[4], Clare Stephens[1,5], Kathy Pritchard-Jones[1,2,6], Donna Chung[1], Allan Hackshaw [4,8] and Michael Machesney[3,7,8]

BACKGROUND: We evaluated whether faecal immunochemical testing (FIT) can rule out colorectal cancer (CRC) among patients presenting with 'high-risk' symptoms requiring definitive investigation.

METHODS: Three thousand five hundred and ninety-six symptomatic patients referred to the standard urgent CRC pathway were recruited in a multi-centre observational study. They completed FIT in addition to standard investigations. CRC miss rate (percentage of CRC cases with low quantitative faecal haemoglobin [f-Hb] measurement) and specificity (percentage of patients without cancer with low f-Hb) were calculated. We also provided an updated literature review.

RESULTS: Ninety patients had CRC. At f-Hb < 10 μg/g, the miss rate was 16.7% (specificity 80.1%). At f-Hb < 4 μg/g, the miss rate was 12.2% (specificity 73%), which became 3.3% if low FIT plus the absence of anaemia and abdominal pain were considered (specificity 51%). Within meta-analyses of 9 UK studies, the pooled miss rate was 7.2% (specificity 74%) for f-Hb < 4 μg/g.

DISCUSSION: FIT alone as a triage tool would miss an estimated 1 in 8 cases in our study (1 in 14 from meta-analysis), while many people without CRC could avoid investigations. FIT can focus secondary care diagnostic capacity on patients most at risk of CRC, but more work on safety netting is required before incorporating FIT triage into the urgent diagnostic pathway.

Utility of MRI-Directed Contrast-Enhanced Mammography for Biopsy Planning of Suspicious MRI-Detected Breast Lesions

Berhanemeskel A. Nida, MD[1], Timothy B. Rooney, MD[2] and Matthew M. Miller, MD, PhD[2]*

Background: Suspicious lesions detected on contrast-enhanced breast MRI often undergo targeted ultrasound evaluation to determine if they are amenable to ultrasound-guided biopsy.

Objective: To assess the utility of MRI-directed contrast-enhanced mammography (CEM) performed for biopsy planning of suspicious MRI-detected breast lesions, with comparison to MRI-directed ultrasound.

Methods: This retrospective study included 120 patients (median age, 50.3 years) who underwent MRI-directed CEM from September 2014 to July 2020 for biopsy planning of a total of 140 suspicious breast MRI lesions; 109 lesions were also evaluated by MRI-directed ultrasound at the same visit. Reference standard was histopathology or at least 2 years of imaging follow-up for benign lesions. Rates of detecting a correlate for the MRI lesion, among all lesions and among malignant lesions, were compared between MRI-directed CEM, MRI-directed ultrasound, and combined MRI-directed CEM and ultrasound (i.e., correlate detected on either modality) using McNemar's test. Frequencies of imaging modalities used for biopsy guidance after MRI-directed imaging were determined.

Results: Twenty-one of 109 lesions were malignant. Lesion detection rate was higher for MRI-directed CEM than for MRI-directed ultrasound [69.7% (76/109) vs 45.9% (50/109); p<.001], and higher for combined MRI-directed CEM and ultrasound [77.1% (84/109)] than for either MRI-directed CEM (p=.008) or MRI-directed ultrasound (p<.001). The malignant lesion detection rate was not significantly different between MRI-directed CEM and MRI-directed ultrasound [95.7% (22/23) vs 78.3% (18/23); p=.13]. A total of 31.2% (34/109) of lesions were seen only on MRI-directed CEM, and 7.3% (8/109) were seen only on MRI-directed ultrasound. A total of 17.4% (4/23) of malignant lesions were seen only on MRI-directed CEM, and none were seen only on MRI-directed ultrasound. Among lesions recommended for biopsy, stereotactic- or tomosynthesis-guided biopsy was recommended for 25.2% (26/103), ultrasound-guided biopsy for 35.9% (37/103), and MRI-guided biopsy for 38.8% (40/103).

Conclusion: MRI-directed CEM detects a higher fraction of suspicious MRI lesions than does MRI-directed ultrasound. MRI-directed CEM/ultrasound detects a higher fraction than either method individually.

Current Status of Contrast Enhanced Mammography: A Comprehensive Review

Anat Kornecki, MD[1]

Abstract

Objectives: The purpose of this article is to provide a detailed and updated review of the physics, techniques, indications, limitations, reporting, implementation and management of contrast enhanced mammography. **Background:** Contrast enhanced mammography (CEM), is an emerging iodine-based modified dual energy mammography technique. In addition to having the same advantages as standard full-field digital mammography (FFDM), CEM provides information regarding tumor enhancement, relying on tumor angiogenesis, similar to dynamic contrast enhanced magnetic resonance imaging (DCE-MRI). This article reviews current literature on CEM and highlights considerations that are critical to the successful use of this modality. **Conclusion:** Multiple studies point to the advantage of using CEM in the diagnostic setting of breast imaging, which approaches that of DCE-MRI.
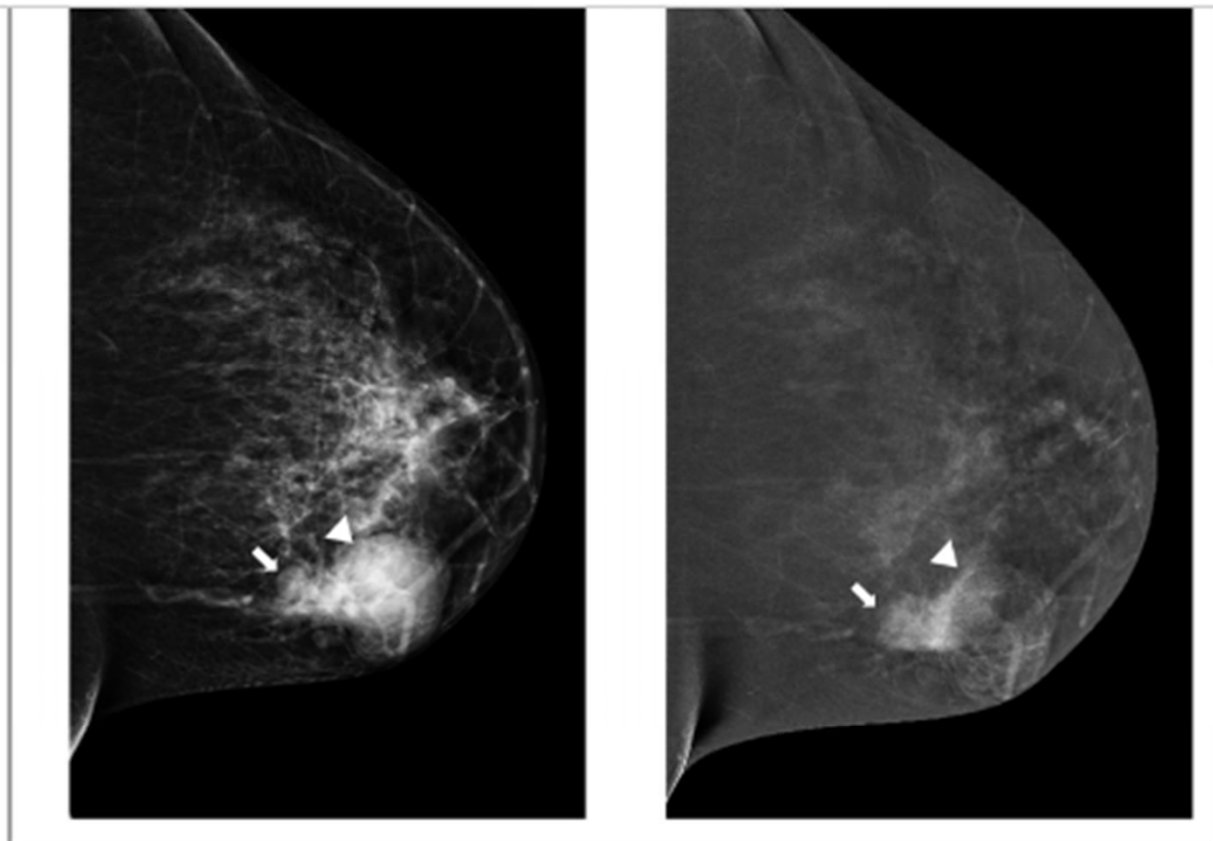
Figure 3. Craniocaudal projections of the right breast in a 46-year-old female who presented for left breast lump. The patient developed an allergic reaction to contrast iodine and therefore images acquisition started only 16 minutes after intravenous contrast venous injection. Lobulated mass confined by well circumscribed margin seen on low-energy image (A). Recombined image (B) still shows marked degree of enhancement within the smaller component of the lesion (B) whereas milder enhancement seen within the larger component (arrow head), likely due to washout. The lesion was biopsied under ultrasound guidance (not shown), proved to be high grade invasive mammary carcinoma.
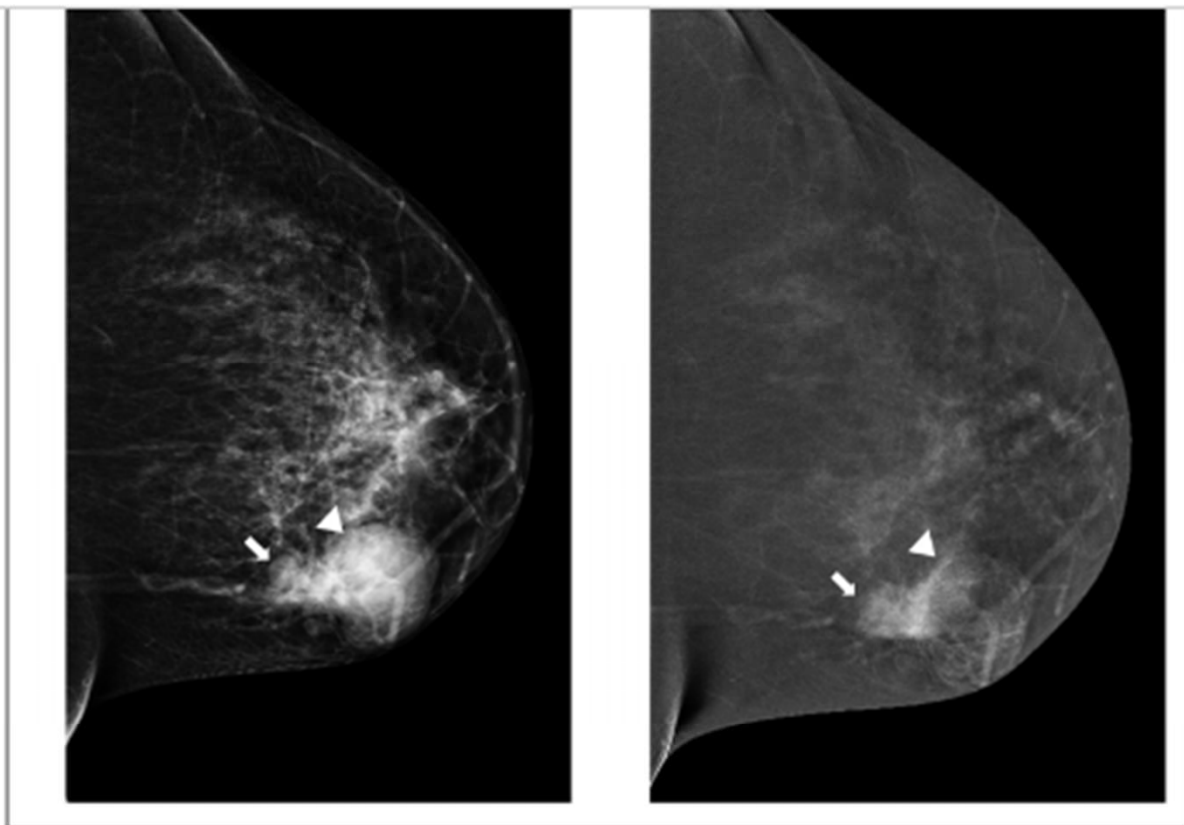
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Conclusion

CEM is an emerging technique that can be used for multiple diagnostic breast imaging indications with a sensitivity and specificity approaching that of DCE-MRI, particularly in dense breast. The main advantages of CEM are providing rapid streaming to treatment and allowing diverse diagnostic breast MRI resources to be available for other purposes such as supplementary screening. Future perspective might be the development of contrast enhanced tomosynthesis (CET), at the same radiation dose, which will add the benefit of 3-dimensional information to that of the contrast enhancement.

The role of CEM in supplementary screening is promising based on preliminary data but future research is needed to determine what patients may benefit most. The forthcoming Contrast-Enhanced Mammography Imaging Screening Trial (CMIST), will help to determine if CEM can improve breast cancer detection compared with DBT in patients with dense breasts.

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Does FFR-CT really offer value in real-world practice?

By Erik L. Ridley, AuntMinnie.com staff writer

August 24, 2022 -- In real-world clinical practice, fractional flow-reserve CT (FFR-CT) software may not yield any improvement over standard radiological assessment of coronary artery disease (CAD), according to research published August 18 in *Clinical Radiology*.

FULL LENGTH ARTICLE | ARTICLES IN PRESS

Computed tomography-derived fractional flow reserve (FFR$_{CT}$) has no additional clinical impact over the anatomical Coronary Artery Disease - Reporting and Data System (CAD-RADS) in real-world elective healthcare of coronary artery disease

M.C.K. Hamilton • P.F.P. Charters • S. Lyen • ... J.W. Strange • T. Johnson • N.E. Manghat • Show all authors

RESULTS

Of the 1,145 analysable studies (mean follow up 618 ± 153 days) the incidence of a positive result was 7% with a 5.4% elective revascularisation rate. Two hundred and forty-five patients (CAD-RADS 2–4) had FFR_{CT}. FFR_{CT} reduced the accuracy of the CAD-RADS grade from 91% to 78.4% ($p<0.001$). In CAD-RADS 2, the accuracy is reduced from 99% to 90.7% ($p=0.005$), and in CAD-RADS 3 from 93.9% to 67.7% ($p<0.001$). In CAD-RADS 4, FFR_{CT} increases accuracy from 69.4% to 75.5% ($p=0.025$), but 89.8% of FFR_{CT} are positive and specificity is low (26.7%).

CONCLUSION

In the present "real-world" practise, FFR_{CT} does not improve standard radiological assessment of coronary disease graded by the CAD-RADS alone.

Highlights

- In CAD-RADS 2, FFRct reduces CTCA accuracy for predicting a positive outcome.

- In CAD-RADS 3, FFRct reduces CTCA accuracy for predicting a positive outcome.

- In CAD-RADS 4, FFRct marginally improves CTCA accuracy for a positive outcome.

- In CAD-RADS 4, FFRct has poor specificity.

- In CAD-RADS 2–4, FFRct overall reduces the accuracy of CTCA.

	CAD-RADS alone	Adding FFR-CT to CAD-RADS	p-value
Sensitivity	82.9%	92.7%	p = 0.102
Specificity	92.7%	75.5%	p < 0.001
Accuracy	91%	78.4%	p < 0.001

The higher sensitivity for FFR-CT was not statistically significant, but the lower specificity and accuracy did reach significance.

THE END