INTERNET NEWS

BS NGUYỄN VĂN CÔNG

INICAL NEWS | MRI

Gadolinium in ... beer?

Kate Madden Yee
Aug 22, 2025

ng beer may have a new downside, according to a team of researchers who have reported that the MRI contras
nium has been found in beer and energy drinks.

sults offer a "snapshot" of the current status of rare earth element contamination in beverages, according to a te
Bordeneuve-Pérès, PhD, of the University of Brest in France. The findings were published August 21 in *Food C*

results demonstrate that rare earth element contamination, albeit in relatively small amounts, is now common
rially-produced beverages including beers and sugar-rich drinks," the group wrote.

arth elements (REE) are a group of 16 metallic elements often used in a range of industrial applications, includ
sts, magnets, polishing activities, batteries, and lasers, the team noted. The group includes cerium, dysprosium,
um, gadolinium, holmium, lanthanum, lutetium, neodymium, praseodymium, promethium, samarium, scandiu
m, thulium, ytterbium, and yttrium.

such as gadolinium (Gd), are also used for medical purposes; and in fact, one of the best-documented types of
ons is that of gadolinium generated by MR imaging, the authors wrote. In some MRI exams, patients are admi
nium-based contrast agents (GBCAs) that are then voided through the kidneys; that urine flows into waste wat
n to natural water sources.

, in densely populated countries with significant medical activity, traces of Gd are commonly detected in river
rs … as well as in coastal waters, where gadolinium concentrations are increasing over time," the authors wrot
linium excesses are also detected in tap water, and therefore in beverages derived from it, as exemplified by sc
man fast-food restaurants.

er, the magnitude of the occurrence of REEs in food and beverages remains unclear, according to th
ators. To address the knowledge gap, they conducted a study that included 30 beers of different br
ed between November 2024 and April 2025 and two sugar drinks (a Red Bull original, made in Aus
uze Tea peach made in France) that they chemically tested for the presence of gadolinium.

-five of the beers included in the research were from Europe, while four were from Asia and one w

um (Affligem, Bud, Grimbergen, Hoegaarden, La Chouffe, Leffe Blonde, Rince Cochon)
(Tsingtao)
Republic (Budweiser Budwar, Pilsner Urquell)
nd (Bombardier)
e (1664, Bourbon, Desperados, Heineken, Kronenbourg, Pelforth)
any (Eku 28, Löwenbrau Munchen, Paulaner Münchner Hell)
d (Guinness)
(Asahi Super Dry)
(Pilsen Callao)
d (Namysł´ow Pils)
gal (Sagres, Super Bok)
Korea (Cass)
(Estrella)
nd (Chang)
y (EFES)

e investigators chemically prepared each sample to assess the presence of rare
h elements and yttrium. They found the following:

beers included in the study and the Red Bull drink showed an anomaly in
but the contamination did not tend to exceed 5 pg/g.

e beer (Sagres, brewed near Lisbon, southwest Portugal) showed a much
ner contamination ("an excess of Gd of the order of 30 pg/g"). The group
ed that this beer is likely brewed using water produced from the Tagus River
ne Iberian Peninsula, "whose Gd-contamination has been previously
blished."

hi SD beer (Tokyo), La Chouffe (Belgium), and Pelforth (Northern France)
showed marked positive anomalies in Gd, but the excesses of Gd producing
m were lower (1 pg/g).

re research is needed, according to the team.

ur study confirms] that beer or other industrial drinks show varying degrees
Gd contamination," it concluded. "This contamination, albeit relatively minor
uld not be neglected … other studies will be required in the coming years to
ess how this pollution may evolve through time."

NICAL NEWS | ULTRASOUND

lder endurance athletes have risk of enlarged aorta

esa Pablos

27, 2020

er endurance athletes may be prone to heart conditions with a relatively high risk of death. ocardiographic imaging helped identify an enlarged aorta in 25% of older athletes in a new y, published on February 26 in *JAMA Cardiology*.

tion of the aorta is a risk factor for a group of related conditions tied to an in-hospital mort of more than 25%, with age, male sex, and hypertension established as some risk factors f ic dilation.

new research suggests long-term endurance exercise may be a risk factor, too.

dings from this study fill an important gap in our understanding of how long-term particip ndurance sport affects the cardiovascular system," wrote the authors, led by Dr. Timothy rchill from the cardiovascular performance program at Massachusetts General Hospital in ton.

vious research has found that intense exercise can contribute to aortic dilation, but no studi ed at the impact of this phenomenon on older endurance athletes. For their study, the autho uited 442 male and female runners and rowers who participated in competitive athletic vities, including the Boston Marathon and U.S. national-level rowing competitions.

athletes were between the ages of 50 and 75 and had at least 10 years of endurance training age of 40. The authors screened out participants with a personal or family history of releva t conditions, including aortopathy and connective tissue disorders.

sthoracic echocardiographic imaging was performed on the athletes to measure their ocardial structure and function. The authors took aortic measurements in triplicate over thre iac cycles.

f the male athletes, almost one-third had at least one aortic dimension of 40 mm or larger; however, gs varied by sport. Male rowers accounted for 61% of athletes with an enlarged aorta. The rowers a icantly larger raw aortic size and ascending aorta than male runners.

ifference in aortic dilation between male rowers and runners could be explained by the cardiovascul y requirements of each sport, the authors noted. For instance, running requires sustained, even ovascular activity, whereas rowing requires different levels of strain during the stroke motion.

e speculative, these findings suggest that the pressure stress uniquely present in rowing may represe tant hemodynamic driver of aortic dilation, particularly at the level of the aortic sinuses," the author

male athletes, the findings were much less pronounced. Only 6% of women had aorta measurement r larger, and there was no significant difference between runners and rowers. However, 38% of fema es would meet the criteria for enlarged aorta if the threshold was lowered to 34 mm, another standar urement.

y, aortic dilation was also linked to elite athlete status, defined as rowers who participated in the Oly championships and marathon runners who completed races in under two hours and 45 minutes. Eli etitors and those with more cumulative years of athletic training had significantly larger aortic dime thors found.

ur knowledge, this study presents the first detailed characterization of the prevalence of clinically re ding aortic dilation among aging competitive athletes," the authors wrote.

these findings mean for clinical outcomes has yet to be ascertained, the authors noted. They theoriz es in aorta size could be a previously unrecognized but benign adaption to endurance sports. Howev es could also mean that long-term training could result in overuse pathology with potentially deadly ications.

re studies aimed at defining the natural history of aortic dilation in this population with an emphasis al outcomes ... will be required to resolve this fundamental uncertainty," the authors wrote. "In the a h data, clinical implications of our findings remain uncertain and will require individualized assessm

NICAL NEWS | ULTRASOUND

cho images show consequences of steroid use among thletes

Amerigo Allegretto
Aug 29, 2025

ocardiography shows the adverse effects of anabolic steroid use among athletes, according to researc
ished August 29 in *JAMA Network Open*.

am led by Jan Frystyk, MD, PhD, from Odense University Hospital in Denmark found that both ma
ale athletes who use steroids have a higher lifetime risk of coronary atherosclerosis and myocardial
unction.

d athletes with anabolic androgenic steroid exposure exceeding five years showed more severe
fication," the Frystyk team wrote.

use of anabolic androgenic steroids is common among recreational athletes. However, the researche
d a lack of data tying steroid use to adverse cardiovascular outcomes, especially in women.

tyk and colleagues used echocardiography to assess cardiovascular health in recreational athletes w
olic androgenic steroids. They compared results with those of athletes who do not use steroids.

cross-sectional, single-center study included 164 participants. Of these, 80 were active steroid users
dian age, 35). The steroid group included 61 men and 19 women. Of the total participants, 26 were
ious steroid users and 58 did not use steroids. Median cumulative lifetime steroid use was 2.2 years
e users and 2.2 years for previous users.

le the authors did not specify which sports the athletes played, they noted that the athletes played at
eational level.

researchers observed no group differences when comparing the number of participants with femora
tid artery plaques or coronary artery calcium (CAC) scores. However, they did find a statistically
ificant difference in the prevalence of coronary noncalcified plaques (NCPs) between active users (n
%) and nonusers (n = 6, 10.3%; p = 0.03).

e investigators also reported that athletes who used steroids had greater
ds of having a positive CAC score (odds ratio [OR], 1.23; p = 0.001) an
onary NCPs (OR, 1.17; p = 0.004) and that those who used steroids for
re than five years had a greater severity of calcifications (n = 94; chi-
ared = 9.78; p = 0.04).

nocardiograms showed significant links between cumulative steroid use
worse left ventricular (regression coefficient: 0.08; p = 0.002) and righ
tricular (0.08; p = 0.001) global longitudinal strain.

ally, almost all athletes (35 of 36) with more than five years of cumulat
roid use had ventricular mass greater than and left ventricular ejection
ction below the median of the normal range.

e study findings support measures to prevent anabolic androgenic steroi
by both men and women in recreational sports, the authors concluded.

CLINICAL NEWS | MOLECULAR IMAGING

Experts issue appropriate use criteria for molecular breast imaging

Will Morton

Aug 27, 2025

oup of experts has issued new appropriate use criteria for technetium-99 (Tc-99m) sestami
d gamma camera imaging of the breast.

ished August 26 in the *Journal of Nuclear Medicine Technology*, the criteria were develop
workgroup of 10 experts convened by the Society of Nuclear Medicine and Molecular
ging (SNMMI) and included representatives from the American College of Radiology (AC
American College of Nuclear Medicine (ACNM), the Society of Breast Imaging (SBI), the
erican Society of Breast Surgeons (ASBS), the American Society of Clinical Oncology
CO), and the European Association of Nuclear Medicine (EANM).

ast scintigraphy with Tc-99m sestamibi has evolved remarkably since its inception more th
decades ago," wrote lead author Elizabeth Dibble, MD, of Brown University in Providenc
and colleagues. "Initially termed breast-specific gamma imaging (BSGI), the technology ha
nced to allow for high-resolution, low-dose imaging with dedicated breast imaging gamma
era systems."

ording to the researchers, the most appropriate uses of molecular breast imaging are as
ws:

plemental screening after mammography in women with dense breasts at average or
mediate risk of breast cancer

plemental screening after mammography in women with dense breasts at high risk of breas
er

adjuvant therapy response monitoring

ecular breast imaging-guided biopsy

dition, despite less robust scientific evidence, the workgroup determined that
ving clinical scenarios may also be appropriate for molecular breast imaging

plemental screening after mammography in women with nondense breasts at
n risk of breast cancer

plemental screening/surveillance in patients with a history of breast cancer

ial staging and evaluation of local tumor extent in a new diagnosis of breast
cer

known primary breast cancer

nically suspicious findings (e.g., bloody nipple discharge) with negative
mmogram and ultrasound results

mmograms with technical limitations (e.g., free silicone injection, prior thera
tradiation fibrosis)

dressing indeterminate findings on a mammogram or ultrasound

ding information to manage discordant biopsy results

lementing appropriate use criteria in clinical practice can assist healthcare
viders in selecting appropriate advanced imaging techniques in various clinic
narios, Dibble and colleagues noted.

NICAL NEWS | CT

entrally located lung cancer may lead to poor patient utcomes

Kate Madden Yee

trally located lung cancer is a poor prognostic factor independent of nodal status, a
tifying it could determine how patients are tracked after undergoing surgery to rem
ors, researchers have reported.

e found that] in patients with resected lung cancer, central location -- defined as loc
he tumor center within the lung's inner one-third -- was independently associated wi
eased risk of locoregional recurrence and poorer recurrence-free survival and overa
ival," said study senior and corresponding author Sang Min Lee, MD, of the Unive
n College of Medicine in South Korea, in a statement released by the *American Jo*
oentgenology. The journal published Lee's and colleagues' findings on August 27.

atients with lung cancer, central location of the tumor is considered a risk factor for
iastinal lymph node metastasis, the group wrote. But the definition of "central" is u
ted.

rrent guidelines recommend invasive evaluation of mediastinal lymph nodes during
ing workup for central lung cancer," the team wrote. "However, the definition of 'ce
es across guidelines, with some defining central tumors as those located within the
r one-third and others as those within the inner two-thirds. Although studies have
ored the optimal definition of central location of lung cancer, consensus is lacking
rding the portion of the long that should be considered central … the dividing lines
veen thirds, and the tumor's reference point … relative to such dividing lines, makin
e definitions difficult to reproduce."

tempt to clarify the definition of central lung cancer, Lee and colleagues conducted
dy that included 1,796 patients who underwent lobectomy or pneumonectomy for
ive lung adenocarcinoma between July 2010 and December 2019. They developed
tomated algorithm that generated segmentation masks on CT, dividing the lungs
hree concentric regions (the lung's inner, middle, or outer third based on two
ence points: tumor center and tumor medial margin).

nvestigators classified tumor location as central versus peripheral according to four
itions:

nter within inner one-third (8.2% of patient cohort)

nter within inner two-thirds (51% of patient cohort)

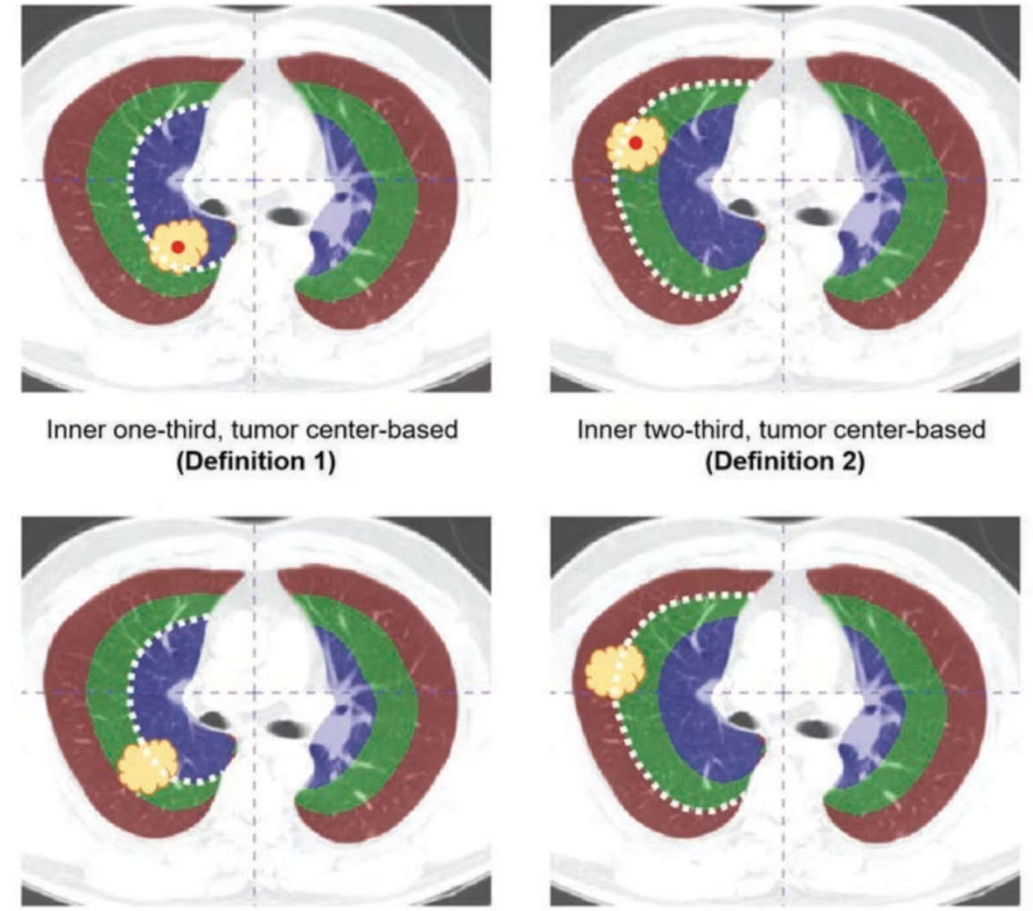
dial margin within inner one-third (29% of patient cohort)

dial margin within inner two-thirds (79.4% of patient cohort)

then assessed any links between central location and locoregional and distant
rences, recurrence-free survival, and overall survival.

all, the researchers found that, in patients with resected lung cancer, central location
ndependently associated with increased risk of locoregional recurrence and poorer
rence-free survival and overall survival.

ciation of hazard risk between ocation of lung adenocarcinoma and patient outcomes	
utcomes	Hazard ratio (with 1 as reference)
ocoregional ce (definition	1.75
ecurrence- ival n 1 and 3)	1.52
verall survival n 1)	1.45



efinition 1 (inner one-third, tumor center–based): assigned when tumor center (red dot on yellow tumor) lies w one-third of lung (white dot-bordered blue area). (B) Definition 2 (inner two-thirds, tumor center–based): assi tumor center lies within either inner or middle third (white dot-bordered blue or green area). (C) Definition 3 hird, tumor medial margin–based): assigned when tumor's medial margin falls within inner one-third (white do red blue area). (D) Definition 4 (inner two-thirds, tumor medial margin–based): assigned when medial margin n either inner or middle third (white dot-bordered blue or green area). Image and caption courtesy of the ARRS

lode-RADS evaluates breast cancers on MRI exams

Amerigo Allegretto
Sep 2, 2025

node reporting system can successfully assess both ductal and lobular breast cancer
ggest findings published September 2 in *Radiology*.

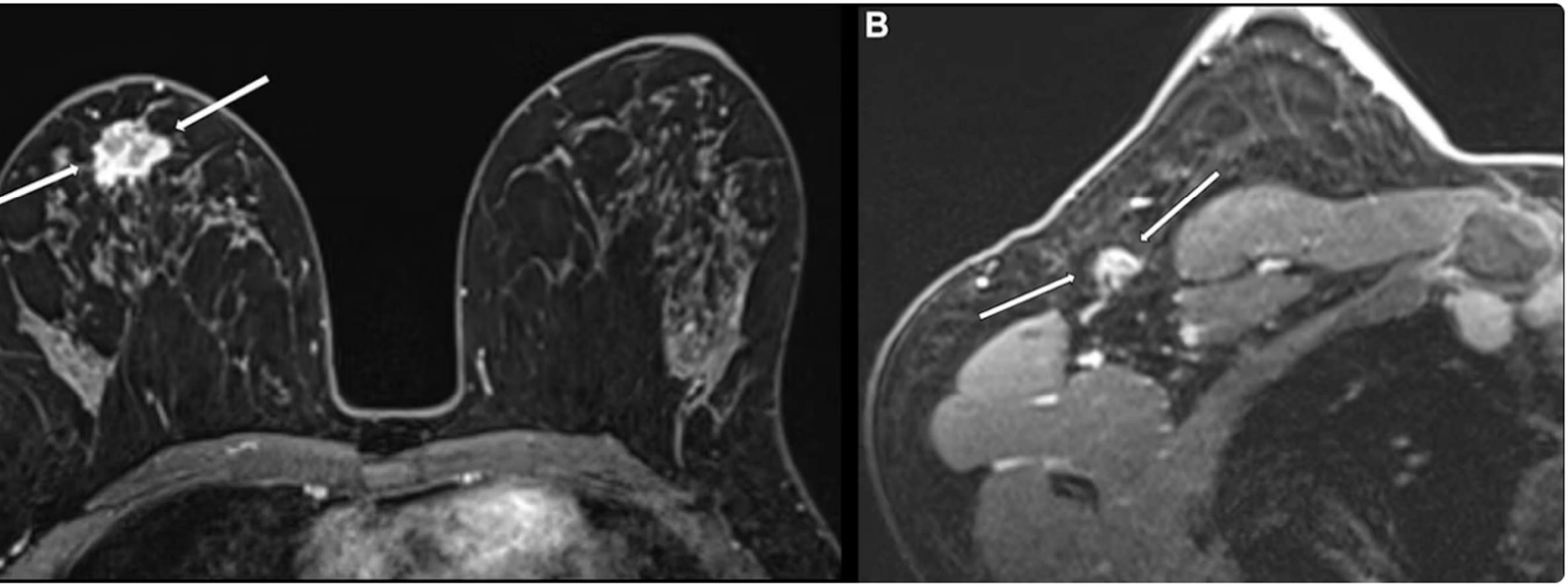
searchers led by Hee Jeong Kim, MD, from the University of Ulsan in Seoul, South
rea, found that the Node Reporting and Data System (Node-RADS) performed
nilarly in axillary nodal evaluation for both invasive ductal carcinoma (IDC) and
vasive lobular carcinoma (ILC). However, it achieved a lower sensitivity for ILC.

efining Node-RADS for individual node analysis would enhance surgical planning
tient outcomes," Kim and co-authors wrote.

hile surgery is the conventional reference standard for nodal staging, recent trends p
vard more use of less invasive approaches. This places emphasis on more accurate
producible preoperative evaluations of axillary nodal status.

roduced by researchers in 2021, Node-RADS addresses variability in assessing and
porting lymph node involvement at CT or MRI. Radiologists can use Node-RADS t
aluate the likelihood of metastasis on a five-point scale. While the reporting and da
stem has performed well in previous studies, Kim and colleagues noted that imagin
aracteristics of breast cancer vary according to the histologic type.

m and colleagues studied the diagnostic performance of Node-RADS at breast MR
edicting axillary lymph node metastasis in patients with IDC versus ILC.



orting and Data System (Node-RADS) true positive: images in a 39-year-old woman who presented with a palpable mass in the right
Axial contrast-enhanced fat-suppressed T1-weighted MRI scan reveals a 27-mm irregular, heterogeneously enhancing mass in the r
ows). (B) Axial contrast-enhanced fat-saturated T1-weighted image from dedicated axillary MRI reveals a prominent lymph node (ar
t level I axilla, measuring 9 mm in the short axis, with focal necrosis, an irregular border, and a displaced fatty hilum. Per the Node-R
ode size was normal, but the configuration criterion yielded a sum score of 4, resulting in a Node-RADS score of 4 (i.e., high suspicio
sion). Following breast-conserving surgery, pathologic examination confirmed grade III invasive ductal carcinoma, which was estrog
egative, progesterone receptor negative, and human epidermal growth factor receptor 2 positive. A sentinel lymph node biopsy, follow
mph node dissection, revealed metastasis in two of the 11 dissected lymph nodes, both of which were macrometastatic.

study included 1,602 women with an average age of 50.6 years who underwent breast MRI in 2017
8. The study also included 1,627 breast cancers, with 25 cases being bilateral cancers. IDCs made u
t cancer cases (n = 1,486), while 141 cases were ILCs.

team reported frequencies of lymph node metastasis of 25% for IDC and 28% for ILC (p = 0.44).

ng a cutoff score of three for the Node-RADS scale showed the best performance in terms of sensiti
specificity.

Performance of Node-RADS scale for IDCs, ILCs

Measure	ILCs	IDCs	p-value
Sensitivity	52.5%	71.1%	0.02
Specificity	85.1%	86.5%	0.71
Area under the curve (AUC)	0.74	0.83	0.08

l using multivariable logistic regression analyses, the researchers confirmed that Node-RADS
ring is an independent predictor of axillary lymph node metastasis (odds ratio, 3.1; p < 0.001).

an times for this approach with a dedicated axillary MRI sequence were three
nutes on a 1.5-tesla scanner and two minutes, 40 seconds on a 3-tesla scanner

owever, acquisition time has since been decreased to under two minutes," the
earchers added.

e study authors stressed the importance of assessing both the presence of
tastasis and the overall disease burden and involvement of nonsentinel nodes
d while Node-RADS scoring may have use for patients with IDC, the author
ote that "caution is warranted when applying this system to patients with ILC
nsidering the lower sensitivity for these cancers.

th continued refinement and validation, Node-RADS could become central to
ast cancer staging in the era of precision medicine, according to
accompanying editorial written by Vivianne Freitas, MD, from the Joint
partment of Medical Imaging in Toronto, Ontario, Canada.

itas wrote that both diagnostic performance and the capacity to be applied
oss diverse patient populations and clinical settings define the utility of any
aging assessment tool.

this regard, the work presented by Kim et al represents a substantial
vancement," she added.