冠動脈CTAは男性と女性とで異なる心血管リスクを示す（Abstract＃MSVA51-17）

動脈硬化の存在、範囲および組成が心血管リスクにおける男女差を明らかにした

Presence, extent and composition of atherosclerosis reveal gender differences in cardiovascular risk

冠動脈CT造影（CTA）の所見は男女においては異なる心血管リスクを示すとのスタディ結果が2011年Radiological Society of North America学会で発表された。研究者らは急性胸痛を有する患者480人（平均年齢55歳、約65%が女性）の冠動脈CTAの結果を解析した。各々の患者において急性冠症候群の可能性が除外された。冠動脈CTAの結果と12.8ヵ月後の予後データを比較することにより、プラーク沈着の範囲、重症度およびタイプと重大な心イベント発現との相関を示すことができた。経過観察期間中に70人の患者に合計87件の重大な有害心事象が発現した。予後データとCTAの総合的なプラーク所見との関連をみると、プラーク沈着量が多く動脈硬化が広範な女性は男性よりも心血管リスクが有意に大であった。特に、プラークの種類に関わらず広範である場合や狭窄部位が4個を超える場合に、女性において男性よりも重大な心イベントのリスクが有意に高かった。しかし、動脈病変が非石灰化病変の場合には重大な有害心事象は男性の方が多かった。

Full Text

Findings on coronary CT angiography (CTA) show different cardiovascular risks for men and women, according to a study presented at the 2011 annual meeting of the Radiological Society of North America.

Researchers at the Medical University of South Carolina analyzed the results of coronary CTA on 480 patients, mean age 55, with acute chest pain. Approximately 65 percent of the patients were women, and 35 percent were men. The possibility of acute coronary syndrome was ruled out for each of the patients.

Using coronary CTA, the researchers were able to determine the number of vessel segments with plaque, the severity of the blockage and the composition of the plaque.

"The latest CT scanners are able to produce images that allow us to determine whether the plaque is calcified, non-calcified or mixed," said John W. Nance Jr., M.D., currently a radiology resident at Johns Hopkins Hospital in Baltimore, Md.

By comparing the coronary CTA results with outcome data over a 12.8-month follow-up period, the researchers were able to correlate the extent, severity and type of plaque build-up with the occurrence of major adverse cardiac events, such as a myocardial infarction or coronary bypass surgery. The statistical analysis tested all plaques combined (calcified, non-calcified and mixed) and each individual plaque type separately.

"We found that the risks for cardiovascular events associated with plaque were significantly different between women and men," Dr. Nance said.

Within the follow-up period, 70 of the patients experienced major adverse cardiac events, such as death, heart attack, unstable angina or revascularization. In total, 87 major adverse cardiac events occurred among the patients during the follow-up period.

When the outcome data were correlated with the CTA combined plaque findings, the results indicated that women with a large amount of plaque build-up and extensive atherosclerosis are at significantly greater cardiovascular risk than men.

Specifically, the risk for major adverse cardiac events was significantly higher in women than in men when extensive plaque of any kind was present or when more than four artery segments were narrowed.

"This research tells us that extensive coronary plaque is more worrisome in women than the equivalent amount in men," Dr. Nance said.

However, when analyzing risk factors associated with the presence of individual types of plaque, the risk for major adverse cardiac events was greater in men, compared to women, when their artery segments contained non-calcified plaque.

Dr. Nance said the new data suggested that the atherosclerotic process is not necessarily linear and that more research is needed to better understand the disease.

"Our research confirms that coronary CTA provides excellent prognostic information that helps identify risk, but there are gender differences that need to be considered," Dr. Nance said.

Coauthors are U. Joseph Schoepf, M.D., Christopher Schlett, M.D., Garrett Rowe, B.S., J. Michael Barraza, B.S., and Fabian Bamberg, M.D., M.P.H.

TOPICS

Cardiology

冠動脈CTAは男性と女性とで異なる心血管リスクを示す

糖尿病患者において厳密なカロリーダイエットは心機能を改善する

Oncology

新たなスタディから40歳時のマンモグラフィーによるスクリーニングが支持された

Psychiatry

ADHDの小児においては脳の機能的パスウェイが障害されている

MRIスタディの結果、魚摂取によりアルツハイマーリスクが低下することが示された

暴力的なビデオゲームは脳機能を変化させる

糖尿病患者において厳密なカロリーダイエットは心機能を改善する(Abstract＃SSE04-06)

心臓MRIにより2型糖尿病患者の代謝治療の効果が有効に定量化できた

Cardiac MRI effectively quantifies effects of metabolic intervention in patients with type 2 diabetes

肥満の2型糖尿病患者において低カロリーダイエットは、インスリン依存性を低下させ心膜の脂肪減少に伴い左室拡張機能を持続的に改善させる、と2011年Radiological Society of North America学会で発表された。研究者らは、2型糖尿病患者15人―男性7人、女性8人―の心機能および心膜の脂肪を、4ヵ月間にわたる1日500カロリーの食餌療法の前後に心臓MRIを用いて解析した。4ヵ月間のカロリー制限によりボディマスインデクス(BMI)は35.3から27.5に低下した。心膜の脂肪は39ミリリッター(ml)から31mlに減少し、心拡張能の指標であるE/A比は0.96から1.2に改善した。16週後にはインスリンが必要な患者はいなかった。通常食でさらに14ヵ月間追跡したところ、BMIは31.7に上昇したが心膜の脂肪は32mlにやや増加したのみであった。経過観察後のE/A比は1.06であった。体重が再増加したにもかかわらず、これらの心血管系への好ましい効果は長期間にわたり持続していた。これらの結果から、このような治療法に画像診断法を含めることの重要性が強調されると研究者らは述べている。

Full Text

A low-calorie diet eliminates insulin dependence and leads to sustained improvement in heart function in obese patients with type 2 diabetes mellitus, according to a study presented at the 2011 annual meeting of the Radiological Society of North America.

"Lifestyle interventions may have more powerful beneficial cardiac effects than medication in these patients," said the study's lead author, Sebastiaan Hammer, M.D., Ph.D., from the Department of Radiology at Leiden University Medical Center in the Netherlands. "It is striking to see how a relatively simple intervention of a very low calorie diet effectively cures type 2 diabetes mellitus. Moreover, these effects are long term, illustrating the potential of this method."

Pericardial fat can be detrimental to cardiac function, especially in people with metabolic disease. Dr. Hammer and colleagues set out to determine the long-term effects of initial weight loss induced by caloric restriction on pericardial fat and cardiac function in obese patients with type 2 diabetes.

Using cardiac MRI, the researchers analyzed cardiac function and pericardial fat in 15 patients-including seven men and eight women-with type 2 diabetes before and after four months of a diet consisting of 500 calories daily. Changes in body mass index (BMI) were also measured.

The results showed that caloric restriction resulted in a decrease in BMI from 35.3 to 27.5 over four months. Pericardial fat decreased from 39 milliliters (ml) to 31 ml, and E/A ratio, a measure of diastolic heart function, improved from 0.96 to 1.2.

After an additional 14 months of follow-up on a regular diet, BMI increased to 31.7, but pericardial fat only increased slightly to 32 ml. E/A ratio after follow-up was 1.06.

"Our results show that 16 weeks of caloric restriction improved heart function in these patients," Dr. Hammer said. "More importantly, despite regain of weight, these beneficial cardiovascular effects were persistent over the long term."

Dr. Hammer pointed out that these findings stress the importance of including imaging strategies in these types of therapy regimens.

"MRI clearly showed all the changes in fat compartments, structural changes in the heart and improvements in diastolic function, making it a very effective method of quantifying the effects of metabolic interventions," he said.

While these results are promising, not all patients are eligible for this type of therapy. Patients should consult with their doctors before embarking on any type of reduced calorie diet.

"It is of utmost importance to follow such a complicated intervention under strict medical supervision," Dr. Hammer said, "especially as patients may be able to stop all anti-diabetic therapy from Day 1."

Coauthors are Jan W. Smit, M.D., Ph.D., Johannes A. Romijn, M.D., Ph.D., Jacqueline Jonker, M.D., Marieke Snel, M.D., Albert De Roos, M.D., Hildo Lamb, M.D., and Rutger W. Van Der Meer, M.D.

TOPICS

Cardiology

冠動脈CTAは男性と女性とで異なる心血管リスクを示す

糖尿病患者において厳密なカロリーダイエットは心機能を改善する

Oncology

新たなスタディから40歳時のマンモグラフィーによるスクリーニングが支持された

Psychiatry

ADHDの小児においては脳の機能的パスウェイが障害されている

MRIスタディの結果、魚摂取によりアルツハイマーリスクが低下することが示された

暴力的なビデオゲームは脳機能を変化させる

新たなスタディから40歳時のマンモグラフィーによるスクリーニングが支持された（Abstract＃SST01-01）

40代でのマンモグラフィースタディから浸潤性乳がん発生率は家族歴に関係なく同等であることが示された

Mammography study of women in their 40s reveals similar incidence of invasive breast cancer regardless of family history

乳がん家族歴のない40代女性の浸潤性乳がん発生率は家族歴のある女性と全く同等であるとのスタディ結果が2011年Radiological Society of North America学会で発表された。研究者らはレトロスペクティブなレビューを行い、スクリーニングでマンモグラフィー検査を受け40～49歳の間に乳がんと診断された女性―家族歴を有するまたは有さない―の人数およびがんの型を同定した。乳がんを有していた40～49歳の患者1,071人のうち373人はスクリーニングの結果診断された。そのうち39%は乳がん家族歴を有し、61%は家族歴を有さなかった。家族歴を有する群では63.2%が浸潤がんであり、36.8%は非浸潤がんであった。家族歴を有さない群では64%が浸潤がんであり、36%が非浸潤がんであった。それぞれのリンパ節転移率は31%および29%であった。これらの結果から、40～49歳の女性においては乳がん家族歴の有無に関わらず早期発見およびスクリーニングマンモグラフィーの重要性が強調される、と筆者らは述べている。

Full Text

Women in their 40s with no family history of breast cancer are just as likely to develop invasive breast cancer as are women with a family history of the disease, according to a study presented today at the annual meeting of the Radiological Society of North America (RSNA). These findings indicate that women in this age group would benefit from annual screening mammography.

"We believe this study demonstrates the importance of mammography screening for women in this age group, which is in opposition to the recommendations issued by the task force," said Stamatia V. Destounis, M.D., radiologist and managing partner of Elizabeth Wende Breast Care, LLC, in Rochester, N.Y.

For the study, Dr. Destounis and colleagues performed a retrospective review to identify the number and type of cancers diagnosed among women between the ages of 40 and 49-with and without a family history of breast cancer-who underwent screening mammography at Elizabeth Wende Breast Care from 2000 to 2010. The researchers then compared the number of cancers, incidence of invasive disease and lymph node metastases between the two groups.

Of the 1,071 patients in the 40 to 49 age group with breast cancer, 373 were diagnosed as a result of screening. Of that 373, 39 percent had a family history of breast cancer, and 61 percent had no family history of breast cancer. In the family history group, 63.2 percent of the patients had invasive disease, and 36.8 percent had noninvasive disease. In the no family history group, 64 percent of the patients had invasive disease, and 36 percent had noninvasive disease. The respective lymph node metastatic rates were 31 percent and 29 percent.

"In the 40 to 49 age group, we found a significant rate of breast cancer and similar rates of invasive disease in women with and without family history," Dr. Destounis said. "Additionally, we found the lymph node metastatic rate was similar."

According to Dr. Destounis, these results underscore the importance of early detection and annual screening mammography for women between the ages of 40 and 49 whether or not they have a family history of breast cancer.

Coauthors are Jenny Song, M.D., Posy Seifert, D.O., Philip Murphy, M.D., Patricia Somerville, M.D., Wende Logan-Young, M.D., Andrea Arieno, B.S., and Renee Morgan, R.T.

TOPICS

Cardiology
冠動脈CTAは男性と女性とで異なる心血管リスクを示す

糖尿病患者において厳密なカロリーダイエットは心機能を改善する

Oncology
新たなスタディから40歳時のマンモグラフィーによるスクリーニングが支持された

Psychiatry
ADHDの小児においては脳の機能的パスウェイが障害されている

MRIスタディの結果、魚摂取によりアルツハイマーリスクが低下することが示された

暴力的なビデオゲームは脳機能を変化させる

ADHDの小児においては脳の機能的パスウェイが障害されている（Abstract＃LL-PDS-SU1A）

ADHDのマーカーとなりうる検査結果が脳の異常を示したfMRIから明らかにされた

Potential biomarker for ADHD revealed though fMRI study that identified brain abnormalities

機能的磁気共鳴画像（fMRI）を用いた結果、注意欠陥多動性障害（ADHD）のバイオマーカーとなりうる小児の脳の異常が同定されたとのスタディ結果が、2011年Radiological Society of North America学会で発表された。研究者らは典型的な発育過程にある小児18人およびADHDと診断された小児18人（9歳～15歳）にfMRIを施行した。fMRIを行う一方で小児らは注意力を持続する検査（1組の3つの数を見せたあとに次の数字群が元の組にマッチしているか否かを尋ねる）に参加した。各々の対象に対しfMRIにより脳活性化マップが作成され、小児が課題を行っている間にどの脳部位が活性化するかが示された。正常なコントロール群と比較し、ADHDの小児は視覚的な注意情報を処理するのに関わるいくつかの脳領域の機能的活性が異常であることが示された。ADHDの小児の視覚皮質と前頭前皮質との機能的連結性に障害が存在することが明らかにされた。このスタディは予備的ではあるが、今回の結果は、ADHDにおいて視覚刺激がないための作業記憶の欠損の基盤となっている可能性がある。

Full Text

Using functional magnetic resonance imaging (fMRI), researchers have identified abnormalities in the brains of children with attention deficit hyperactivity disorder (ADHD) that may serve as a biomarker for the disorder, according to a study presented at the annual meeting of the Radiological Society of North America (RSNA).

According to the National Institute of Mental Health in the United States, there is no single test capable of diagnosing a child with ADHD. As a result, difficult children are often incorrectly labeled with he disorder while other children with the disorder remain undiagnosed.

"Diagnosing ADHD is very difficult because of its wide variety of behavioral symptoms," said lead researcher Xiaobo Li, Ph.D., assistant professor of radiology at the Albert Einstein College of Medicine in New York. "Establishing a reliable imaging biomarker of ADHD would be a major contribution to the field."

For the study, Dr. Li and colleagues performed fMRI on 18 typically developing children and 18 children diagnosed with ADHD (age range 9 to 15 years). While undergoing fMRI, the children engaged in a test of sustained attention in which they were shown a set of three numbers and then asked whether subsequent groups of numbers matched the original set. For each participant, fMRI produced a brain activation map that revealed which regions of the brain became activated while the child performed the task. The researchers then compared the brain activation maps of the two groups.

Compared to the normal control group, the children with ADHD showed abnormal functional activity in several regions of the brain involved in the processing of visual attention information. The researchers also found that communication among the brain regions within this visual attention-processing pathway was disrupted in the children with ADHD.

"What this tells us is that children with ADHD are using partially different functional brain pathways to process this information, which may be caused by impaired white matter pathways involved in visual attention information processing," Dr. Li said.

Dr. Li said much of the research conducted on ADHD has focused on the impulsivity component of the disorder.

"Inattention is an equally important component of this disorder," she said, "and our findings contribute to understanding the pathology of inattentiveness in ADHD."

Coauthors are Shugao Xia, Ariane Kimball and Craig Branch, Ph.D.

TOPICS

Cardiology

冠動脈CTAは男性と女性とで異なる心血管リスクを示す

糖尿病患者において厳密なカロリーダイエットは心機能を改善する

Oncology

新たなスタディから40歳時のマンモグラフィーによるスクリーニングが支持された

Psychiatry

ADHDの小児においては脳の機能的パスウェイが障害されている

MRIスタディの結果、魚摂取によりアルツハイマーリスクが低下することが示された

暴力的なビデオゲームは脳機能を変化させる

MRIスタディの結果、魚摂取によりアルツハイマーリスクが低下することが示された（Abstract # SST11-04）

3D volumetric MRIスタディの結果、魚摂取と灰白質体積量が大きいことおよび認知機能低下リスク低下には関連があることが示された

3D volumetric MRI study reveals that fish consumption is associated with larger gray matter volumes and reduced risk for cognitive decline

焼き魚または蒸し魚を毎週摂取する人々は脳の健康が向上し軽度認知機能障害（MCI）およびアルツハイマー病発症のリスクが軽減する可能性がある、と2011年Radiological Society of North America学会で発表された。このスタディの対象として、Cardiovascular Health Studyから認知機能の正常な260人が抽出された。魚摂取に関する情報はNational Cancer Institute Food Frequency Questionnaire（米国国立がん研究所食物摂取頻度アンケート）を用いて収集した。魚を毎週摂取する者は163人であり、多くが魚を週1～4回摂取していた。各患者は脳の3D volumetric MRIを施行された。焼き魚または蒸し魚を毎週摂取することと脳のいくつかの領域の灰白質体積とには正の相関関係が認められた。魚摂取量と関連した海馬、後帯状回および眼窩前頭皮質体積増加は5年間のMCIまたはアルツハイマー病への進行を約5倍減少させた。焼き魚または蒸し魚を良く食べる人は認知機能もまた良好であった。揚げ魚を食べても脳体積は増加せず、認知機能保護も認められなかった。

Full Text

People who eat baked or broiled fish on a weekly basis may be improving their brain health and reducing their risk of developing mild cognitive impairment (MCI) and Alzheimer's disease, according to a study presented at the annual meeting of the Radiological Society of North America (RSNA).

"This is the first study to establish a direct relationship between fish consumption, brain structure and Alzheimer's risk," said Cyrus Raji, M.D., Ph.D., from the University of Pittsburgh Medical Center and the University of Pittsburgh School of Medicine. "The results showed that people who consumed baked or broiled fish at least one time per week had better preservation of gray matter volume on MRI in brain areas at risk for Alzheimer's disease."

For the study, 260 cognitively normal individuals were selected from the Cardiovascular Health Study. Information on fish consumption was gathered using the National Cancer Institute Food Frequency Questionnaire. There were 163 patients who consumed fish on a weekly basis, and the majority ate fish one to four times per week. Each patient underwent 3-D volumetric MRI of the brain. Voxel-based morphometry, a brain mapping technique that measures gray matter volume, was used to model the relationship between weekly fish consumption at baseline and brain structure 10 years later. The data were then analyzed to determine if gray matter volume preservation associated with fish consumption reduced risk for Alzheimer's disease. The study controlled for age, gender, education, race, obesity, physical activity, and the presence or absence of apolipoprotein E4 (ApoE4), a gene that increases the risk of developing Alzheimer's.

The findings showed that consumption of baked or broiled fish on a weekly basis was positively associated with gray matter volumes in several areas of the brain. Greater hippocampal, posterior cingulate and orbital frontal cortex volumes in relation to fish consumption reduced the risk for five-year decline to MCI or Alzheimer's by almost five-fold.

"Consuming baked or broiled fish promotes stronger neurons in the brain's gray matter by making them larger and healthier," Dr. Raji said. "This simple lifestyle choice increases the brain's resistance to Alzheimer's disease and lowers risk for the disorder."

The results also demonstrated increased levels of cognition in people who ate baked or broiled fish. "Working memory, which allows people to focus on tasks and commit information to short-term memory, is one of the most important cognitive domains," Dr. Raji said. "Working memory is destroyed by Alzheimer's disease. We found higher levels of working memory in people who ate baked or broiled fish on a weekly basis, even when accounting for other factors, such as education, age, gender and physical activity."

Eating fried fish, on the other hand, was not shown to increase brain volume or protect against cognitive decline.

Coauthors are Kirk Erickson, Ph.D., Oscar Lopez, M.D., Lewis Kuller, M.D., H. Michael Gach, Ph.D., Paul Thompson, Ph.D., Mario Riverol, M.D., Ph.D., and James Becker, Ph.D.

TOPICS

Cardiology

冠動脈CTAは男性と女性とで異なる心血管リスクを示す

糖尿病患者において厳密なカロリーダイエットは心機能を改善する

Oncology

新たなスタディから40歳時のマンモグラフィーによるスクリーニングが支持された

Psychiatry

ADHDの小児においては脳の機能的パスウェイが障害されている

MRIスタディの結果、魚摂取によりアルツハイマーリスクが低下することが示された

暴力的なビデオゲームは脳機能を変化させる

暴力的なビデオゲームは脳機能を変化させる（Abstract # SST11-06）

暴力的なビデオゲームで1週間遊ぶことにより認知機能および感情コントロールに関連した脳領域が変化する

One week of violent video game play alters brain regions associated with cognitive function and emotional control

暴力的なビデオゲーム遊びの長期的な脳への影響を若年男性において機能的磁気共鳴画像（fMRI）で解析した結果、認知機能および感情コントロールに関連した脳領域の変化が認められた、と2011年Radiological Society of North America学会で発表された。過去に暴力的なビデオゲームへの接触の少ない18～29歳の健康な成人男性を2群に無作為割り付けした。1つ目の群は家で10時間のシューティングゲームを1週間行い、次の週はゲームを止めた。もう2つ目の群は暴力的なゲームを全く行わなかった。各参加者は、感情的干渉課題および認知阻害計算課題を行っている間のfMRIを、スタディ開始時に加えフォローアップの1および2週後に施行された。1週後に、ビデオゲーム群においては、彼らのベースライン時およびコントロール群と比較し、感情的な課題を行っている間の左下前頭葉の活性化が少なく、計算課題施行中の前帯状皮質の活性化が少なかった。ゲームを止めてから2週後にはこの高次領域の変化は消失していた。

Full Text

A functional magnetic resonance imaging (fMRI) analysis of long-term effects of violent video game play on the brain has found changes in brain regions associated with cognitive function and emotional control in young adult men after one week of game play. The results of the study were presented at the 2011 annual meeting of the Radiological Society of North America (RSNA).

The controversy over whether or not violent video games are potentially harmful to users has raged for many years. But there has been little scientific evidence demonstrating that the games have a prolonged negative neurological effect.

"For the first time, we have found that a sample of randomly assigned young adults showed less activation in certain frontal brain regions following a week of playing violent video games at home," said Yang Wang, M.D., assistant research professor in the Department of Radiology and Imaging Sciences at Indiana University School of Medicine in Indianapolis. "These brain regions are important for controlling emotion and aggressive behavior."

For the study, 22 healthy adult males, age 18 to 29, with low past exposure to violent video games were randomly assigned to two groups of 11. Members of the first group were instructed to play a shooting video game for 10 hours at home for one week and refrain from playing the following week. The second group did not play a violent video game at all during the two-week period.

Each of the 22 men underwent fMRI at the beginning of the study, with follow-up exams at one and two weeks. During fMRI, the participants completed an emotional interference task, pressing buttons according to the color of visually presented words. Words indicating violent actions were interspersed among nonviolent action words. In addition, the participants completed a cognitive inhibition counting task.

The results showed that after one week of violent game play, the video game group members showed less activation in the left inferior frontal lobe during the emotional task and less activation in the anterior cingulate cortex during the counting task, compared to their baseline results and the results of the control group after one week. After the second week without game play, the changes to the executive regions of the brain were diminished.

"These findings indicate that violent video game play has a long-term effect on brain functioning," Dr. Wang said.

Coauthors are Tom Hummer, Ph.D., William Kronenberger, Ph.D., Kristine Mosier, D.M.D., Ph.D., and Vincent P. Mathews, M.D. This research is supported by the Center for Successful Parenting, Indiana.

TOPICS

Cardiology

冠動脈CTAは男性と女性とで異なる心血管リスクを示す

糖尿病患者において厳密なカロリーダイエットは心機能を改善する

Oncology

新たなスタディから40歳時のマンモグラフィーによるスクリーニングが支持された

Psychiatry

ADHDの小児においては脳の機能的パスウェイが障害されている

MRIスタディの結果、魚摂取によりアルツハイマーリスクが低下することが示された

暴力的なビデオゲームは脳機能を変化させる