Scots cancer discovery

Find may help with earlier detection of killer disease

By **Mark Stevenson**

A MAJOR breakthrough in the battle against breast cancer has been uncovered by Scottish scientists.

The lives of thousands of women could be saved following a successful experiment to detect the illness earlier.

Surgeons from Dundee University found a malignant tumour remains cold when surrounding breast tissue is heated up to around 20C.

The crucial insight means a specialist should find it much easier to determine if a lump is cancerous because of the varying temperatures.

It is hoped the breakthrough could lead to advances in understanding the disease and result in early detection of breast cancer.

Professor Dr Jayant Vaidya, who carried out the experiment with four colleagues, said yesterday the development is "very exciting indeed".

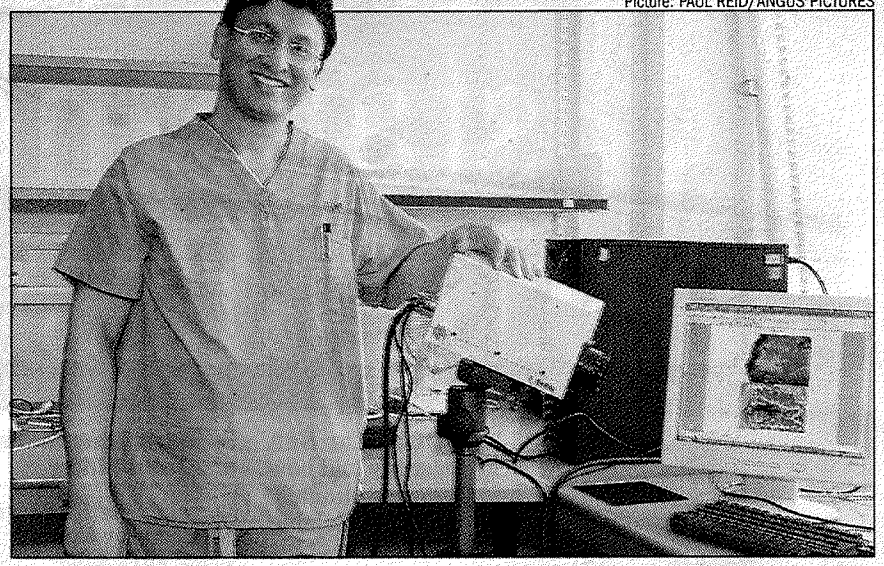
He added: "Nothing like this has been done before. We heated up a specimen and used a high-resolution thermal imaging camera to take a picture. We found the tumour stayed cold whilst the rest of the tissue heated up.

"Then we did the same thing on another five samples and every single one had the same outcome.

"This could open up a lot of doors for breast cancer treatment and detection, hopefully saving the lives of women all around the world."

The scientists tested tumours from six women just one hour after they were removed during surgery at Dundee's Ninewells Hospital.

Picture: PAUL REID/ANGUS PICTURES



BREAKTHROUGH: Dr Jayant Valdya and team's finding could save many lives

'Nothing like this has been done before'

Using a hot-air gun, similar to a hairdryer, they heated the tissue but on each occasion the tumour stayed cold.

The research has been hailed as vital in the understanding of breast cancer and could lead to new drugs being developed that will help treat the disease.

It is also hoped that eventually a probe could be inserted into the breast to warm up the area around any suspected tumour.

Using thermal imaging equipment the test could then tell doctors if the lump is cancerous or not, meaning some women could avoid needing a painful biopsy.

The medics involved are now set to be awarded a grant to carry out the research on a much larger scale. The project has even attracted interest from as far away as Australia with cancer biologists there carefully monitoring its progress.

'It could open a lot of doors for treatment'

The original report, which has recently been published in the International Journal of Surgery, predicted that the technique could become crucial in understanding breast cancer.

It read: "This difference in thermal properties between cancerous and normal breast tissues could have wide implications.

"The difference in response to heat may be related to various factors such as the relative proportions of water, fatty fibrous or vascular tissue, or indeed malignant tissue, and understanding the role of these, and any other, factors could lead to new insights.

"Thus thermal response may one day become a very useful prognostic or predictive parameter."

Charity groups yesterday welcomed the research, which could help cut down the number of people succumbing to the disease each year.

Maria Leadbeater, Clinical Nurse Specialist at Breast Cancer Care, said: "We know that early detection of breast cancer is vital, as it can lead to simpler and more effective treatment, which can save more lives.

"Although this is a very small study, the results are interesting and potentially encouraging, but more research is needed to ascertain whether this technique could play a part in breast cancer detection in the future."

Breast cancer is one of the biggest killers in the UK with someone being diagnosed with the disease every 12 minutes. In Scotland, nearly 4,000 people are diagnosed with the condition every year.

The Press and Journal
Scotland
26/5/2007

Scientists in Dundee hail breast cancer breakthrough

SURGEONS HOPE DISCOVERY WILL 'OPEN UP DOORS' FOR TREATMENT AND DETECTION

Scientists in Dundee are pioneering a new method for the early detection of breast cancer, it was revealed yesterday.

A team of surgeons at Dundee University have found malignant tumours remain cold when surrounding breast tissue is heated to about 20C.

It is hoped the discovery will make it easier for specialists to determine if a lump is cancerous while leading to advances in understanding of the disease.

The study tested tumours removed from six women an hour after they had undergone surgery at Ninewells Hospital in Dundee.

Each piece of tissue was treated with a hot-air gun, and on each occasion the tumour stayed cold.

Professor Dr Jayant Vaidya, senior lecturer and consultant surgeon in the university's department of surgery and molecular oncology, said the discovery was very exciting.

"Nothing like this has been done before," he said. "We heated up a specimen and used a high-resolution thermal imaging camera to take a picture.

"We found the tumour stayed cold while the rest of the tissue heated up. Then we did the same thing on another five samples and every single one had the same outcome.

"This could open up a lot of doors for breast-cancer treatment and detection, hopefully saving the lives of women all around the world."

The scientists are hoping for a grant to allow the research to continue on a larger scale.

A report on the study, which was published in the International Journal of Surgery, predicts the technique could become crucial in understanding breast cancer.

Meanwhile, scientists at Aberdeen University have discovered a link between mouth cancer and the genes which break down alcohol, it was revealed yesterday.

A major international study found people's risk of developing oral cancer was related to genes which regulate how fast or slowly alcohol was metabolised by the body.

Researchers spent five years studying hundreds of patients with cancers of the mouth, larynx and oesophagus at centres throughout Europe and central and South America. They also studied patients who were free of the disease.

The study focused on two genes involved in metabolising alcohol – a substance which is already known to be a risk factor for oral cancer.

The academics found those with a variant in the genes appeared to be less susceptible to the cancers because alcohol was broken down more quickly.

Dr Tatiana Macfarlane, senior lecturer at the University of Aberdeen's department of general practice and primary care, said: "The study showed that your risk of getting oral cancers is linked to genetics as well as lifestyle.

"We found that, in particular, the risk depends on how fast your body metabolises alcohol.

"The results suggest that the faster you metabolise it, the lower your risk.

"These results provided the strongest evidence yet that alcohol consumption is strongly linked to oral cancers.

> *"Nothing like this has been done before"*

"The risk is particularly high if you also smoke or rarely eat fruit and vegetables."

Professor Gary Macfarlane chairman in epidemiology at the university said: "At a time when we are concerned about the levels of alcohol consumption in the United Kingdom, these results demonstrate the public-health importance of measures to reduce consumption and prevent deaths at young ages from diseases, including oral cancers."

The research is published in the Nature Genetics journal.

The Courier
Dundee
26/5/2008

Dundee team find cancer clue in heat

A SMALL study at Ninewells Hospital in Dundee has prompted big hopes of a breakthrough in detecting breast cancer.

Surgeons used hot air to warm up samples removed from six patients during surgery for breast cancer in an experiment that has never been done before.

They discovered that the cancers warmed up much less than the surrounding normal breast tissue.

The hope is that "this new physical characteristic" can be exploited to detect breast cancer earlier and avoid the need for patients to undergo painful biopsies.

The Dundee discovery is causing interest around the world. But, in a paper published in the International Journal of Surgery, the Dundee University team point out that more investigation needs to be done.

They want to gain a better understanding of exactly what is happening and whether the technique can be applied to other solid tumours.

In their small study they found that the tumours stay cold when the surrounding tissue is heated up to around 20 degrees.

It means a cancer specialist can easily see if a lump is cancerous because of the different temperatures.

Mr Jayant Vaidya, senior lecturer and consultant surgeon in the department of surgery and molecular oncology at Dundee University, said the discovery is very exciting.

"Nothing like this has been done before," he said. "We heated up a specimen and used a high resolution thermal imaging camera to take a picture.

"We found the tumour stayed cold whilst the rest of the tissue heated up. Then we did the same thing on another five samples and every single one had the same outcome.

"This could open up a lot of doors for breast cancer treatment and detection, hopefully saving the lives of women all around the world."

The researchers hope a probe could be developed to insert into the breast and heat the area around the tumour, which could mean bypassing a painful biopsy for some women.

Charities have welcomed the report but said more research is needed.

Charity Breast Cancer Care said, "Although this is a very small study the results are interesting and potentially encouraging.

"But more research is needed to ascertain whether this technique could play a part in breast cancer detection in the future."

Around 4000 people are diagnosed with breast cancer in Scotland every year.

Breakthrough in diagnosing cancer

A BREAKTHROUGH by Scottish scientists could lead to the earlier detection of breast cancer and help save lives, it was claimed yesterday.

Surgeons at Dundee University have found a way to quickly identify malignant tumours. They have discovered the tumours stay cold when the surrounding tissue is heated up.

It means a specialist can easily see if a lump is cancerous because of the different temperatures.

Professor Dr Jayant Vaidya of the university's department of surgery and molecular oncology, said: "Nothing like this has been done before. We heated up a specimen and used a high-resolution thermal imaging camera to take a picture.

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The researchers hope a probe could be developed to insert into the breast and heat the area around the tumour, which could mean bypassing a painful biopsy.

Charities have welcomed the report. A spokesperson for Breast Cancer Care said: "We know early detection of breast cancer is vital, as it can lead to simpler and more effective treatment which can save more lives."

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THE TIMES OF INDIA The Times of India -Breaking news, views. reviews, cricket from across India

Indian makes breast cancer discovery

28 May 2008, 1027 hrs IST, PTI

LONDON: A Goa-born surgeon researching and teaching at the Dundee University in Scotland has pioneered a new method for the early detection of breast cancer.

Jayant Vaidya, senior lecturer and consultant surgeon at the university, is a leading member of a team of surgeons that discovered that malignant tumours remain cold when surrounding breast tissue is heated to about 20 degrees Celsius.

Experts hope the discovery will make it easier for doctors to determine if a lump is cancerous, and also lead to advances in understanding of the disease.

A study conducted by the team tested tumours removed from six women an hour after they had undergone surgery at the Ninewells Hospital in Dundee.

Each piece of tissue was treated with a hot-air gun, and on each occasion the tumour stayed cold.

Terming the discovery as 'very exciting', Vaidya said: "Nothing like this has been done before. We heated up a specimen and used a high-resolution thermal imaging camera to take a picture. We found the tumour stayed cold while the rest of the tissue heated up. Then we did the same thing on another five samples and every single one had the same outcome."

"This could open up a lot of doors for breast-cancer treatment and detection, hopefully saving the lives of women all around the world," he said.

The team hopes that a probe could be developed to insert into the breast and heat the area around the tumour, which could mean bypassing a painful biopsy.

A report on the study, which was published in the *International Journal of Surgery* , predicts the technique could become crucial in understanding breast cancer.

The Telegraph
calcutta, india

Today's Edition | Thursday , May 29 , 2008 |

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Test opens new door on breast cancer

G.S. MUDUR

New Delhi, May 28: A spur of-the-moment experiment by a Goa-educated doctor in Scot
land has helped scientists dis cover a novel property of bre ast cancer tissues that might improve diagnosis and treat ment of the disease.

Cancer surgeon Jayant Sharad Vaidya and his colleagues at the University of Dundee have found that when resected breast tissues are exposed to heat, malignant tu mours within them remain cooler than normal tissues.

The temperatures of the tumours remained 12°C to 20°C below the temperatures of normal tissues, the scientists have reported in the International Journal of Surgery.

"The tumours respond dif ferently to heat. Understanding why this happens may give us fresh clues about the nature of cancer itself," Vaidya told **The Telegraph** over the phone.

"The response of tumours to heat has never been studied until now. This observation op-ens a new door that may lead to better diagnosis and treatment," said Vaidya, who had studied at the Goa Medical College and the Tata Memori al Centre, Mumbai.

Standard methods of dete- c-ting breast cancer include ph- y-sical examination, mammog raphy and magnetic resona-n- ce imaging. Each of these uses a unique property that differ entiates the tumour from the surrounding healthy tissues.

A physical exam looks for typical hard features of tumo- urs. A mammography relies on X-rays, and magnetic reso nance imaging is based on how tissues interact with mag netic fields.

"But none of them is per fect," Colin Purdie, a consult ant pathologist and team member at Ninewells Hospital, Dundee told **The Telegraph**. The different response to heat shown by the tumours suggests that doctors may be able to look for tumours using an entirely new property, Purdie said.

Vaidya said the experime- nt was the result of an almost impulsive decision to observe what happens when freshly- resected breast tissues are ex posed to heat.

"We have a medical techno- logy lab. They were testing a new thermal imaging instru ment, and I had resected brea- st tissues. I wondered what would happen if I exposed it to a hot air gun," Vaidya said.

The scientists subsequent ly exposed six specimens of breast cancer to heat and fou- nd that in every specimen the tumour warmed less than the surrounding healthy tissues.

The differential heat respo- nse of tumours might emerge a tool to help surgeons trying to remove tumours from bre- ast tissues — a delicate pro- cess aimed at removing all the malignant foci, while conserv ing as much healthy breast tis sue as possible.

"Identifying the margins of tumours is important," Purdie said.

But the doctors caution that their observations would need to be validated through a larger number of samples, and a method to apply this technique to living patients has yet to be developed.

Healthy tissues and tu mours at normal tempera tures show no difference when examined through a thermal imaging camera. They re spond differently only when excess heat is applied.

In patients, doctors are un likely to expose breast tissues to significant differences in temperatures. But sensitive thermal imaging equipment may be able to detect decimal point differences of tempera tures when tissues are heated to just one or two degrees, Vaidya said.

Hindustan Times
November 4, 2006

Press Trust Of India
London, May 28, 2008

First Published: 12:52 IST(28/5/2008)
Last Updated: 13:01 IST(28/5/2008)

Indian surgeon pioneers breast cancer detection

A Goa-born surgeon researching and teaching at the Dundee University in Scotland has pioneered a new method for the early detection of breast cancer.

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"This could open up a lot of doors for breast-cancer treatment and detection, hopefully saving the lives of women all around the world," he said.

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A report on the study, which was published in the International Journal of Surgery, predicts the technique could become crucial in understanding breast cancer.

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Indian surgeon leads breakthrough in breast cancer detection

PTI | May 28, 2008 | 10:07 IST

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Lokasatta,
Mumbai
28 May 2008

नव्हते. त्याने नितीश कटाराचा काटा काढण्यासाठी होती.

स्तनांचा कर्करोग खूप लवकरच्या अवस्थेतच ओळखणे शक्य

लंडन, २८ मे/पीटीआय

स्तनाचा कर्करोग असलेल्या लाखो महिला रुग्णांना वरदान ठरणारे संशोधन गोव्याचे शल्यविशारद डॉ. जयंत शरद वैद्य यांनी केले असून त्यामुळे कर्करोग खूप लवकरच्या अवस्थेतच ओळखणे शक्य होणार आहे. श्री.वैद्य यांनी गोव्याच्या वैद्यकीय महाविद्यालयातून १९८८ मध्ये

गोव्याचे शल्यविशारद डॉ. जयंत वैद्य यांचे क्रांतिकारी संशोधन

पदवी घेतली व आता ते स्कॉटलंडधील दंडी विद्यापीठात कर्करोगावर संशोधन करणाऱ्या शल्यविशारदांच्या पथकातील एक प्रमुख सदस्य आहेत. त्याच विद्यापीठात ते प्राध्यापक म्हणूनही काम करतात. कर्करोग शस्त्रक्रिया याच विषयात त्यांनी विशेषज्ज्ञता आहे.

त्यांच्या नेतृत्वाखालील पथकाने सहा स्त्रियांच्या शस्त्रक्रियेदरम्यान काढलेल्या कर्करोग गाठींचा अभ्यास केला. त्यांनी गाठीतील प्रत्येक ऊतीला हॉटएअर गनने २० अंश सेल्सियसपर्यंत तापवले तेव्हा गाठ मात्र थंड राहिली. वैद्य यांनी सांगितले की, हा शोध अतिशय उत्साह वाढविणारा आहे.

यापूर्वी असे संशोधन कुणी केले नव्हते. आम्ही अर्बुदातील नमुना ऊती तापवल्या व हाय रेझोल्यूशन थर्मल इमेजिंग कॅमेऱ्याने छायाचित्रे घेतली. तेव्हा आजूबाजूच्या ऊती तापत असताना गाठ मात्र थंड राहिल्याचे दिसून आले. इतर पाच नमुन्यांवर केलेल्या प्रयोगातही हाच परिणाम दिसून आला. यातून स्तनाच्या कर्करोगावरील उपचार पद्धतीत आमूलाग्र बदल घडून येणार आहेत. ■

नवभारत टाइम्स
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भारतीय ने कैंसर की आसान पहचान बनाई

29 May 2008, 0132 hrs IST, पीटीआई

लंदन : भारतीय डॉक्टर जयंत शरद वैद्य ने ब्रेस्ट कैंसर की शुरुआती पहचान के लिए एक नई प्रक्रिया को ईजाद किया है। यह प्रक्रिया दुनिया भर के लाखों कैंसर पीड़ितों के लिए काफी मददगार हो सकती है।

गोवा मेडिकल कॉलेज से 1988 में ग्रैजुएशन करने वाले जयंत स्कॉटलैंड की डूनडी यूनिवर्सिटी में इस नई प्रक्रिया की खोज करने वाली टीम के प्रमुख सदस्य हैं। जयंत और उनके सहयोगी सर्जनों ने पाया है कि ब्रेस्ट टिशूज को 20 डिग्री सेल्सियस तक गर्म करने पर घातक ट्यूमर ठंडा बना रहता है। जयंत यूनिवर्सिटी में सीनियर लेक्चरर और सलाहकार सर्जन हैं। विशेषज्ञों का मानना है कि इस खोज के जरिए डॉक्टरों के लिए यह पता लगाना आसान होगा कि ब्रेस्ट की गांठ कैंसर युक्त है या नहीं।

स्टडी के दौरान छह महिलाओं के ब्रेस्ट से ट्यूमर को निकालने के एक घंटे बाद यह टेस्ट किया गया। रिसर्चरों ने टिशूज के हर टुकड़े पर गर्म हवा डाली और हर बार पाया कि दूसरी टिशूज के गर्म होने पर भी ट्यूमर ठंडा ही बना रहता है। वैद्य कहते हैं कि यह अपनी तरह की पहली खोज है। हर सैंपल को गर्म करने पर ट्यूमर वाला हिस्सा ठंडा ही रहता है, जबकि दूसरे टिशूज गर्म हो जाते हैं।

जयंत ने उम्मीद जताई कि इस खोज से ब्रेस्ट कैंसर की पहचान और नए ट्रीटमेंटों के कई रास्ते खुल जाएंगे। रिसर्चरों की टीम को यह भरोसा है कि कोई ऐसा पैटर्न विकसित हो सकेगा, जिससे ब्रेस्ट में मौजूद ट्यूमर के आस-पास के क्षेत्र को गर्म किया जा सके। इससे बायोप्सी जैसी तकलीफदेह प्रक्रिया से बचा जा सकेगा।