

Heavy Ion Radiotherapy

# Promising tool to combat cancer

STAR HEALTH DESK

With the increasing rate of cancer in the world, scientists have been increasing their efforts to develop promising solutions or strengthen the existing weapons to combat cancer. Radiotherapy using heavy ion is such a promising tool that can be used as effective therapy in many types of cancer, even when conventional radiotherapy fails.

Heavy ions are a form of radiation like X-ray, gamma ray, proton beam — but heavier and has much stronger and superior action. Currently, carbon ion beams are being used for heavy ion cancer radiotherapy.

Heavy ions are accelerated to approximately 70% of the speed of light and applied to patients in order to treat deep-seated cancer within the body where conventional radiation cannot reach. It is useful in head and neck tumours, skull base tumours, bone and soft tissue tumours, lung cancer, liver cancer, prostate cancer etc.

The most suitable indication of heavy ion radiotherapy is cancer cases where surgery is difficult or very risky due to age and other complications. It allows the tumours to be treated without surgery



Beams of heavy ions can target hard-to-reach tumors with great accuracy and with minimal damage to surrounding tissues.

and without causing pain. It is also particularly useful for treating cancers that do not respond well with conventional radiotherapy, such as osteosarcoma, a cancer of bone.

When X-rays and gamma rays are used,

normal tissue surrounding the tumour is also destroyed, which may cause side effects.

Another radiotherapy using proton beam is more precise to target tumor cells than X-ray, but less strong in action

than heavy ion. Heavy ions are twelve times heavier than protons and possess a superior ability to travel in a straight line. For these reasons, it strikes tumour tissue with greater accuracy and destructive force without destroying surrounding normal tissues. Thus, it has the ability to deliver more focused, targeted therapy and produce a very little side effect.

The treatment time for heavy ion radiotherapy is relatively shorter, 3 weeks on an average as compared to that of conventional radiotherapy that requires 6-7 weeks.

Heavy ion is being emerging as the promising solution in cancer radiotherapy treatment. However, it is not widely available worldwide. Japan is the pioneer in heavy ion radiotherapy and is home to three of the world's six medical centres that have gigantic facilities. Scientists and cancer specialists in Japan have recently started world's first clinical trial to treat localised breast cancer with heavy ion radiotherapy only. It could be a ground breaking solution for millions of women who do not want their breast removed by surgery or do not want to undergo conventional radiotherapy with a number of side effects.

## HEALTH TIPS

### Check overeating

Overeating leads to obesity. The following tips may help you check overeating.



- 1. Reduce sweeteners:** Research shows artificial sweeteners may actually increase a person's hunger because there is no calorie payoff for the brain, triggering more snacking throughout the day.
- 2. Plan ahead:** Planning and portion control ahead of time makes your commitment to healthier eating more manageable and it helps individuals curb the instinct to grab anything when hungry. When possible, cook several entrees ahead of time so when hunger hits, you have healthy options ready.
- 3. Use smaller plate:** Use smaller plates and bowls. Smaller surface size means smaller portions. Also, your eyes trick your brain into thinking you are eating more than you actually are once you see that the plate looks full.
- 4. Keep trigger foods away:** Researchers are beginning to realise the spell certain foods can cast over the brain. You cannot resist foods may play with your brain's appetite-control center and actually reset satisfaction levels. It is best to keep your trigger foods out of the house entirely — no matter how much self control you think you have.

## HEALTHbulletin



### Breastfeeding may pass good bacteria from mom to baby

Breast milk delivers beneficial bacteria from a mother's gut to her baby's digestive system, according to a new study published in the journal Environmental Microbiology.

Researchers found the same strains of several types of beneficial bacteria in breast milk and in mothers' and babies' feces. Strains found in breast milk may help establish a critical nutritional balance in the baby's gut and may be important to prevent intestinal disorders.

### Mediterranean diet may lower risk of clogged leg arteries

Older adults who eat a Mediterranean diet may lower their risk of developing painful narrowing of the arteries in the legs, new research published in the Journal of the American Medical Association indicates.

Previous studies showed that Mediterranean diet — rich in olive oil, nuts, fruits and vegetables, whole grains and fish — cut their risk of suffering a heart attack or stroke by about 30 percent over five years. Now the new findings suggest the benefit extends to peripheral artery disease by preventing clogging these blood vessels.

### Prenatal Diagnosis

## Detecting baby's disease before birth

PROF DR M KARIM KHAN

Mr Alim (name disguised to protect identity) has a child of 7 years old who is diagnosed with Haemoglobin E Beta Thalassemia Major. It is a genetic disease where there is destruction of red blood cell. Mr Alim came to me periodically for advice and for blood transfusion for the child.

He became deeply concerned when his wife became pregnant again. He asked me if there was any way to predict the same genetic disease in his upcoming baby. I advised them to screen with a method called Chorionic villus sampling and the results showed that upcoming baby had the same disease like its sibling. Then parents were counselled and ultimately they decided to abort the baby with therapeutic abortion.

If any parents already have a child with congenital problems or history of genetic diseases, diagnosis before birth (prenatal diagnosis) is very helpful.

There are three purposes of prenatal diagnosis: (1) to enable timely medical or surgical treatment



of a condition before or after birth, (2) to give the parents the chance to abort a fetus (baby in the womb) with the diagnosed condition, and (3) to give parents the chance to "prepare" psychologically, socially, financially and medically for a baby with a health problem or disability, or for the likelihood of a stillbirth.

In Bangladesh, we are still lagging behind from many developed countries regarding prenatal screening tests. Many invasive tests

like Chorionic villus sampling is not available in Bangladesh but sample can be sent abroad for diagnosis. Prenatal diagnosis can be done by a number of tests including blood test, ultrasonography, tissue sample from baby and the bag containing baby.

Invasive tests like amniocentesis or chorionic villus sampling is indicated in the following circumstances:

- Maternal age over 35 years
- Previous child with chromosomal abnormalities
- A history of any genetic disorder like Down Syndrome diagnosed by biochemical techniques or by DNA analysis
- A request by the parents for fetal sex determination because of history of an X-linked disorder that is not otherwise diagnosable
- Maternal blood testing indicating increased risk for chromosomal abnormalities
- As part of the work up of fetal anomalies found by ultrasonography

The writer is a Professor of Paediatrics, working at Community Based Medical College, Mymensingh. E-mail: mmuk Khan@gmail.com

## Seminar on emergency obstetric and newborn care

With a view to assessing the need of Emergency Obstetric and Newborn Care (EmONC) in 24 districts in Bangladesh, icddr,b conducted a study recently. To disseminate the results of the study, the organisation held a seminar at their premise, says a press release.

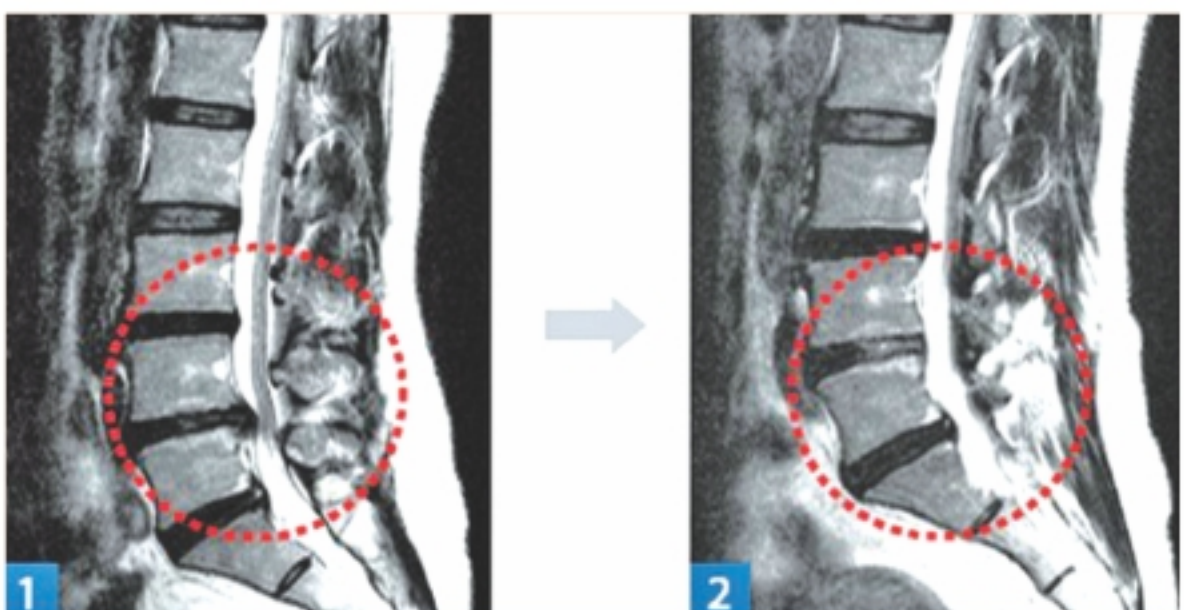
The study revealed that there was a huge shortfall when only about 2.5 public designated EmONC facilities

per 500,000 population were identified in the study area. The shortfall was mainly due to low coverage of public designated basic EmONC facilities.

Although, private facilities in Bangladesh are not designated as EmONC facilities, a substantial number of them offer obstetric and newborn care services in urban areas. The study also assessed gaps in

availability of EmONC services that is a major concern particularly in facilities located at upazilla levels and hard-to-reach areas mainly due to unavailability of doctors and trained nurses.

In an effort to further improve maternal and child health by and beyond 2015, icddr,b also developed a Geographic Information System (GIS) to monitor and evaluate the country's EmONC services in 24 districts.



## Low back pain and false positive MRI

Almost all of us develop low back pain at some point during our lifetime. It is the second highest cause of work absenteeism and great economical loss as well sufferings. More than 95% cases, this back pain is non-specific and does not need aggressive treatment. However, many patients get worried about back pain and want to exclude any serious cause. MRI is a common test for exclusion of serious diseases as a cause of back pain. But some studies questioned about the sensitivity and specificity of the test.

Asymptomatic patients with no back pain have been found to have a high incidence of positive MRI findings. Jensen and Coworkers have found that 64% of asymptomatic individuals who underwent an MRI had abnormal appearing lumbar discs at some level. These abnormalities seen on MRI often are not the origin for the patient's back pain. It may be due to age-related spinal disc changes or other reasons. Over-reliance on the MRI as a sensitive tool for diagnosis the cause of back pain may lead to an incorrect diagnosis if not interpreted by skilled people.

Apart from the high incidence of false-positive results, MRI is an expensive test. Thus, we should always correlate with the symptoms and physical signs of the patient before making any diagnosis or intervention.

Though it has pitfall, MRI is useful in many serious causes of back pain and spine disorders. We have to make sure that it has been used and interpreted accurately along with patient's signs and symptoms. It is important to give a second look to make final comment and treatment.

The write up is compiled by Dolilur Rahman, Senior Consultant of Physiotherapy, Bangladesh Physiotherapy Hospital, Dhaka. E-mail: manipsart@gmail.com



/StarHealthBD

## Knowing for better living

In the government hospitals of Bangladesh . . .

**Cardiovascular** disease is the major cause of **death** !

Check your blood pressure regularly

Check your diabetes regularly

Control your body weight

Avoid smoking

Exercise regularly

Consult your Doctor



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