'Sticky' Blood Linked to Heart Attacks

For years, cardiologists had a nagging sense that a big piece of the puzzle of why people have heart attacks was missing. Although doctors conventionally attributed heart attacks to severe narrowing of the heart's arteries from fatty deposits, they found in studying the coronaries of heart attack victims that the vessels were often relatively clean.

Doctors now believe they are on the trail of the missing piece. It lies not in the heart but in the blood. In recent years, blood clots that plug the heart's blood clots that plug the heart's tiny arteries have emerged as the prime culprits in perhaps 80 per cent of heart attacks, and smaller clots appear to contribute to the more chronic process of hardening of the arteries, or atherosclerosis. Now cardiologists have collected evidence that the blood of heart attack victims may form clots too readily and stick with unusual tenacity to vessel walls, blocking the arteries of the heart.

"We're changing the way we view cardiac events," said Dr. Geoffrey Tofler, a cardiologist at the New England Deaconess Hospital's Institute for Prevention of Cardiovascular Disease in Boston. "People have been aware that the traditional risk factors have not explained all heart attacks and an appreciation of new blood risk factors is filling the gaps."

Blood factors are "critical in heart disease," said Dr. Valentin Fuster, chief of the division of cardiology at the Mount Sinai Medical Center in New York. "When we have looked inside of the heart's arteries, we have seen that clots play an important role."

By combining new insights about the importance of blood clots with old wisdom about hardening and narrowing of the arteries, scientists have developed a compelling model for the genesis of heart attacks: overly aggressive blood clots grow out of control on top of a longstanding high cholesterol deposit.

Research trials of new screening techniques and drugs to interfere with clot formation are in progress, although full benefits are a few years away. At several research hospitals, cardiac patients have their blood scrutinized for qualities that promote vigorous clot formation, in addition to undergoing traditional blood pressure and cholesterol checks. For example, scientists look for platelets that are abnormally sticky, or unusually low levels of tissue plasminogen activator, a naturally occurring compound that destroys small clots as they form.

The first concrete evidence that clots were critical came more than 25 years ago when Dr. Paris Constantinides, a pathologist now at Louisiana State University, studied coronary arteries of heart attack victims at autopsy. In every case, he found a clot plugging a vessel in a region already narrowed by a patch of atherosclerosis, called a plaque.

"You had to have the plaque along one side of the artery to have a cardiac event," Dr. Constantinides said in a recent interview, but narrowing due to hardening of the arteries "wasn't the problem." When the transient clot was removed "some of the vessels were still 70 to 80 per cent open," he said.

At the time, most doctors felt the finding was an artifact of the autopsy. It was not until recently that research on live patients revived and ultimately vindicated his work. Then about 10 years ago, come cardiologists injected dye into the coronary arteries of patients with heart attacks in progress. Later in the decade doctors were able to insert fiber-optic tubes right into the heart for an even better view. In each case they saw clots.

For doctors who remained unconvinced, a series of studies in the last five years have shown that new "clot busting" medicines successfully aborted a number of heart attacks in progress. These drugs, including streptokinase and genetically engineered tissue plasminogen activator, are now routinely used to treat certain heart attacks in early stages and have saved thousands of lives.

The accumulating evidence has led to an explanation of heart attacks that is elegant, simple and compelling: areas of blood vessels that are covered in fatty plaques, or atherosclerosis, become brittle, like egg shells, losing the normal elasticity of the artery's walls.

These regions crack and fissure when the vessel is stretched, such as when the blood pressure climbs naturally in the morning or rises in response to emotional stress. Tiny rifts may even erupt many times a day, exposing a substance called collagen lying deep in the blood vessel wall. The exposure of collagen, the new theory holds, sends an alarm to circulating blood components called platelets, tiny clumps of protein whose function is to plug up holes in the body, whether rifts in deep arteries or cuts in the skin.

Platelets attract other platelets as well as numerous clotting factors, all of which stick together furiously to form a clot. To keep this potentially dangerous process under control, the body produces other substance to limit clot formation. —E.R.

Children at play in unhygienic surroundings of a city slum. Is Health for All by 2000 possible without slum clearance or, for that matter, a better health conditions in and around the slums? — Star photo

Rabeya's Grief

Only providing better medical facilities will not be enough. What is also needed to go along with it is a change in the attitude of the society.

by Sabah Chowdhury

Rabeya was having backache again, while sweeping the yard. She wished she could rest a while, but a lot of household chores were still left to be done. Cleaning of cooking utensils and bringing water from the pond etc. The mere thought of it was making her feel tired. On reflection, she remembered that her first pregnancy had not been so difficult. This was her second one, with a very short interval in between. Though only sixteen, she felt much older than her age.

Life was not easy before marriage as even then she had to work quite hard. But after marriage, life seemed to have changed overnight. She had become pregnant within a few months of marriage. Though pregnant, she had to work harden than before, as her mother-in-law had said that labour would be easier, if she did more physical work. She was also asked to eat less, because then the baby would also not grow very big and hence labour would be a prolonged one, as is in the case of babies which weigh more at birth. But despite such advice, her labour had been a difficult one. The baby had died the day after it's birth. She had felt so desolate ; she had not known she was capable of feeling so much grief. She had gone through so much pain for nothing. Since the bay was a boy, it was even a greater tragedy for her.

Actually she had not wanted a baby so soon, but her husband did. When her sister had secretly taken her to the nearest Health Complex the doctor there had talked to her in detail about her previous pregnancy and childbirth. When asked as to who had assisted her during the childbirth, she had replied that it was her mother-in-law and sister-in-law. When asked about the cause of death of the baby and whether it looked healthy and well after birth, Rabeya was unable to provide a satisfactory answer.

The doctor after listening to her, had advised her to wait at-least for two years before becoming pregnant again. As her body needed to grow strong enough before she took the risk of childbearing again. He had given her some medicine which would prevent her from becoming pregnant now. Her husband was furious when he heard that she had gone to the doctor without his knowledge, and had thrown away the medicine. He told her that such medicine were meant to make a woman barren. Besides how can childbearing do any harm to a woman, and what else were woman for, if not to have children ? Wasn't this what their mothers and grandmothers did ? They never made such a fuss of it as she was doing.

But now Rabeya knew that frequent pregnancies were a great strain on her health and physique. Though she did not protest against her husband, she could not absolutely believe him. One look at her sister-in-law Sufia told her the truth. Sufia in her early twenties already looked older than her age and very sickly. This was her fourth pregnancy. This time she was praying for a boy, as she already had three daughters. Besides, the fear that she may again have another daughter was eating away inside her. Her husband had told her that this time if she gave birth to a girl he will have no alternative but to marry again.

The doctor at the Health Complex had told Rabeya that the next time when she became pregnant she should come to the hospital for regular check-ups. This would help both the mother and child. When she mentioned this to her mother-in-law, she was told that women in their family do not visit hospitals at such small pretexts like pregnancy. She was also asked not to be so concerned about births and deaths of children. It was a part of a woman's life, and she should learn to endure it.

The mother-in-law then told her that out of her own total ten pregnancies only five of the offsprings survived to reach adulthood. One had died of cholera, another of high fever, one son had drowned in the neighboring pond. All of them were between the age of seven months to three years.

Besides she had two miscarriages. This frightened Rabeya, she didn't want to undergo ten pregnancies.

The problems and fears of Rabeya is a common fear of almost all married women of our country, mostly of the rural areas. And these are not baseless. The Maternal Mortality Rate (MMR) in Bangladesh is 6 per 1000 live birth. The hazards of pregnancies and childbirth are responsible for these deaths.

In Bangladesh females are married off at an early age extending from 13 to 17 years. These young brides are then expected to bear a child within a year of their marriage to prove their fertility.This social pressure creates risks to the health of both the mother and the child. Risks to the health of the mother and the child becomes greater when the mother's age is below 18 years or beyond 35 years of age or on bearing more than four children.

Moreover, women get no antenatal care, nor are they given a diet sufficient to meet the needs of a pregnant woman. Deliveries take place at home in unhygienic conditions exposing both mother and the child to the hazards of tetanus and other infections.

Even after delivery they get no special diet, though they are generally breast-fed at this time. Moreover, women are also expected to do their daily household chores throughout pregnancy and soon after delivery, which is altogether a great strain.

Ignorance of family planning methods prevent couples from spacing births or preventing unnecessary ones. High Infant Mortality Rate also prevents them from having less children.

Therefore, there is a need for greater awareness of these problems and their solution among the poor and the illiterate in our country.

To alleviate the conditions of Rabeya's require the cooperation of the entire society. Only providing better medical facilities will not be enough nor will it bring any solution. It is the attitude of the society which has to change.

Sterile Flies Stop Screw-worm Plague

ROME : Mating sterile males with productive females may not be the best idea of Valentine's Day.

But that's exactly what happened around February 14 to the New World Screw-Worm Fly when thousands of sterile males were released over a 22,000-square-kilometre area in northwest Libya.

Indigenous female flies mating with the imported sterile males produce sterile eggs, thus hopefully preventing the further spread of the screw-worm infestation, now contained in that part of North Africa.

The release of the sterile male flies coincided with the pledging conference here for the screw-worm eradication campaign organised by the International Fund for Agricultural Development (IFAD) and the UN Food and Agriculture Organisation (FAO).

The eradication programme "requires the rapid mobilisation of a very complex technology," said Dr. H. De Haen, FAO assistant director-general in charge of the organisation's Agriculture Department. "It also requires the concerted action of many countries and agencies on three continents."

He said "the prospects for a rapid and successful campaign are excellent. The only element which remains to be put in place is the guaranteed finance to see the project through."

Representatives of 48 donor countries and international organisations attended the Second Pledging conference on Screw-worm Eradication. A number of donors indicated they would soon be able to pledge US$15 million in addition to US$31 million pledged at the first conference held in 1990 and US$27 million pledged by Libya.

IFAD President Idriss Jazairy stressed the success of the pilot programme initiated and funded by IFAD (US$1.5 million) and co-financed by the African Development Bank (US$800,000), the UN Development Programme (US$530,000) and FAO (US$230,000).

Originally planned for a period of two years, the programme may now be reduced to one year, with the positive consequence of reducing by half the earlier estimated costs of US$117 million. However, FAO President Jazairy expressed concern over the slow pace of payment of pledged contributions.

He appealed to donors to effect full payment of the initial pledges made-US$31 million out of which only half was received. He also called for donors to bridge the shortfall estimated at US$30 million which are still required in addition to the initial resources to cover the cost of the full-scale programme for one year.

In a matter of a few months, the danger of the further spread of the plague may well be averted

The FAO acts as the executing agency of the high-tech eradication programme using the Sterile Insect Technique (SIT) developed in the United States as a means to break the life cycle of the screw-worm fly.

In its larval stage, the screw-worm fly feeds on the living flesh of warm blooded animals, causing their death if the wounds are not treated. A peak of 2,932 cases per month were reported in Libya in September 1990.

Now reduced also because of the cold weather, the thereat always remains. The fear is that the infestation, if not eliminated now, could spread again soon and affect other areas in North Africa, South Sahara and Southern Europe.

The consequence would be an ecological disaster. Open wounds, no matter how small, in livestock, wild animals, birds and even humans in a given infested area are all prone to mass egg-laying by the fly.

The fly attacks all warm-blooded animals with any form of open wound, even a small tick bite. It causes infection, leading to sickness, debilitation and, if left unchecked, death. If it continues to spread, it could affect some 70 million head of livestock in North Africa alone.

Previously confined to the Americas, the screw-worm fly made its first appearance in North Africa in 1988. So far, over 10,000 cases have been detected and are being treated.

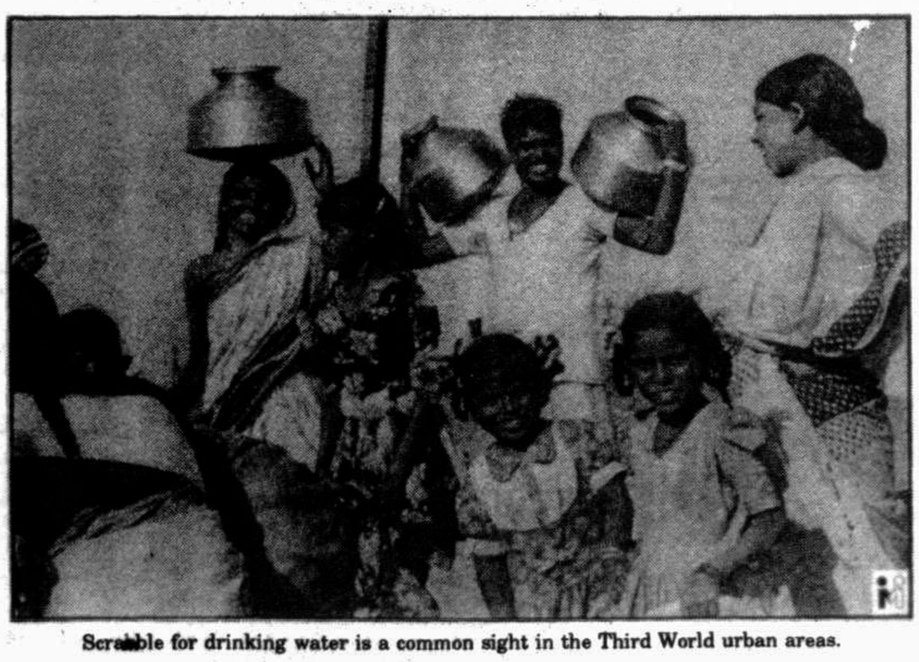
To ensure elimination of fertile egg masses, the largest amount possible of sterile flies need to be dispersed in the infested area. Last December, 3.5 million sterile Mexican screw-worm flies arrived in Tripoli.

The screw-worm pupae have been mass-reared and sterilised through exposure to gamma rays at the Mexican Tuxtla Gutierrez Plant. The technology for screw-worm self-destruction through insect sterilisation has been successfully applied in the US, Mexico and central America.

FAO President Jazairy said the Sterile Insect Technique pilot programme, started last December 16, involved the dispersal of 3.5 million sterile flies per week. This was upgraded to 7 million flies three weeks after.

With the recent phasing into the full-scale programme, dispersal reached 20 million sterile flies per week, a quantity expected to surge up to 100 million per week in a few months.

"As a test-run, the operation has successfully established a precise pattern for the enhanced fly-dispersal in the large-scale programme," Mr. Jazairy said. "I have reason to believe that in a matter of a few months, the danger of further extension of this plague may well be averted." Depthnews Science



Scramble for drinking water is a common sight in the Third World urban areas.

Hoimonti's Motor-bike and Her Immunization Campaign

Mohammad Rafiquzaman

Zohra Begum, a poor and il literate housewife of village Daukona in Khulna in the south-west of Bangladesh is now free from anxiety. Her two-year old son Faruq has been given vaccinated. She has no idea against which diseases her child has been protected but she is convinced that the vaccines keep a child healthy.

The other parents in the village have also got their babies vaccinated. They don't have to walk long distances for the outreach immunization centres. Some parents show more interest and learn the names of diseases thus prevented. Only two or three years ago they knew nothing of immunization.

Siddik Mullick, father of Asma of this village was less lucky. Asma is a cause of constant anxiety to him and to his wife Shirin. Four years ago when Asma was attacked by polio they thought an evil spell was cast upon her and they tried exorcism. Asma has been crippled. Only recently they have learnt that the name of the affliction is polio and it can be prevented by immunization. Asma's ordeal has opened the eyes of the villagers.

Throughout south-eastern region the common people are becoming increasingly aware of immunization and the field network has spread almost to their doorstep. More than half of the one year children were given shots. At the same time every girl and women of child bearing age of 15-45 years are also being immunized against tetanus to prevent material deaths.

Hoimonti Biswas, a field worker of CARE-Bangladesh, a foreign NGO assigned to supervise the immunization campaign in different villages is very hopeful of the success of the programme initiated by the Bangladesh government with support of UNICEF and World Health Organisation. From 2 per cent five years ago, the immunization target reached 80 per cent in 1990.

She rides a motor-bike for her round of the villages. Although this raised eyebrows in the beginning, now her motor-bike has become a symbol of immunization. Dr. Alamgir Khan, a doctor of the rural health centre, who also supervises the immunization campaign, says that they ensure that their are less dropouts and outreach centres are at regular basis. —Dev feature

Mohammad Rafiquzaman, is a reporter of a rural newspaper in Khulna.

'Wake-Up' Drug Cures Sleeping Sickness

Poor Africans are unlikely purchasers of expensive drugs, but Ornidyl will be sold at cost. by Ian Steele

THE World Health Organ-isation (WHO) is using words like miracle to describe a new "wake up" drug which will be used to fight sleeping sickness.

The drug is Ornidyl and it has been administered successfully to more than 600 patients who were infected with the East African variety of sleeping sickness and were near death.

Sleeping sickness, which is caused by trypanosome parasites transmitted by tsetse flies in sub-Saharan Africa, affects about 25,000 people each year and is fatal if untreated. The WHO estimates that the new drug can save about 3,000 patients a year from premature death.

Development of the drug and a pledge to make it available and affordable to all who need it by the end of this year, is also a milestone.

The development, testing and approval process for new drugs is very expensive and is not something which manufacturers embark upon lightly without the prospect of significant profits.

The WHO estimates that some 50 million people in 36 countries are at risk of catching the disease, but poor Africans living in the Sahel are unlikely purchasers of expensive drugs.

Ornidyl was developed by a large American pharmaceutical company, Marion Merrell Dow, as a potential therapy for cancer patients. It has been approved by the United States Food and Drug Administration.

The drug, which is best administered intravenously, costs about US$140 for a two-week course. Marion Merrell Dow will manufacture Ornidyl in the United States and France and distribute it at cost to hospitals and health centres in Africa.

Ornidyl's availability as a cure for sleeping sickness this year is the result of cooperation at several levels. When Marion Merrell Dow published its findings on Ornidyl and offered it to scientific researchers, Dr. Cyrus Bacchi of the Hasking Laboratory at Pace University in New York was studying the metabolic pathways of trypanosomes under a grant from the United Nations Development Programme, the World Bank and the WHO.

Dr. Bacchi tested the drug and was the first person to demonstrate in the laboratory that it worked against the multiplication of trypanosome parasites.

Dr. Tore Godal, director of the United Nations' collaborative effort, said that when Dr. Bacchi reported his findings to the agencies, a cooperative partnership was established with the pharmaceutical company to conquer the disease.

"The pharmaceutical company has offered WHO the rights, the patent, and the technical know-how for the manufacture of Ornidyl on a royalty-free basis,"he said.

"The early symptoms of sleeping sickness are fatigue and an irregular low fever, followed by somnolence, high fever, joint pains, swollen tissues, and an enlarged liver and spleen. As the disease progresses and the parasites invade the central nervous system, patients suffer a mental deterioration, seizures, coma and death.

All other drugs previously used to treat sleeping sickness had serious shortcoming. The drugs Pentamidine and Suramin are not effective in the advanced stages of the disease, and Melarsoprol, which is used in the late stages, is an arsenic-based drug which causes severe lesions of the central nervous system.

Few serious side effects have been observed with Ornidyl when it is administered intravenously. When given orally it may cause mild gastrointestinal problems such as diarrhoea, nausea and vomiting.

It acts by blocking the enzymes which are essential for the proliferation of the trypanosome parasites.

There are two types of African sleeping sickness – the gambiense form which is common in West and Central Africa, and the rhodesiense form which is more common in East and southern Africa.

Ornidyl, like earlier drugs, is more effective against the gambiense form which accounts for about two-thirds of all sleeping sickness cases. Ornidyl is being combined with other substances in an effort to improve its effectiveness on the rhodesiense form. –Depthnews Science.