Greetings from Blue Cross!

Since my last interaction with you, there have been vast changes in our country. In this issue of Medical Bulletin, we will continue the unfinished tutorial on Myocardial Infarction. We have also included a tutorial on “migraine”. These are intended to fill you in so that you are in a better position to guide or counsel your patients.

Lastly, as before, I wish to sincerely thank you for your accolades. We accept these in all humility. Indeed, your feedback is what pushes us to do even better and make sure that Medical Bulletin meets your requirements. We request you to continually provide us with your feedback.

Best regards,

Dr. Kiran Dabholkar, M.D.(Bom), D.G.O., F.C.P.S.
Medical Director & Editor-in-Chief

Call me: 022-66638043 / 9167008017
Mail me: kiran.dabholkar@bluecrosslabs.com
Post me: Blue Cross Laboratories Ltd., Peninsula Chambers, Ganpatrao Kadam Marg, Lower Parel, Mumbai 400 013

Could stiff arteries be behind hypertension?

The stiffening of arteries that occurs as people age could be behind a large proportion of high blood pressure cases, researchers have theorized. A team at the Norwegian University of Life Sciences gathered information on the health history of 74,000 people, including blood pressure samples from more than 65,000 participants.

When blood travels through the aorta, a group of cells called baroreceptors typically sense the pressure and send a signal to the brain. If the signal is too high, the cells signal more strongly and the aorta widens to reduce it.

However, if the aorta is too stiff, the baroreceptors will not signal as strongly to stretch, meaning blood pressure cannot be lowered and will remain high.

Writing in the journal PLOS Computational Biology, first author Klas Pettersen said: ‘Our results suggest that arterial stiffness represents a major therapeutic target. This is contrary to existing models, which typically explain high blood pressure in terms of defective kidney function. Indeed, doctors cannot fully explain the cause of up to 90% of cases of hypertension.’

Senior investigator Stig W Omholt added: ‘If our hypothesis is proven right, arterial stiffness and baroreceptor signalling will become hotspot targets for the treatment of high blood pressure and the development of new medicines and medical devices.’

Exercise ‘should be prescribed’ post-stroke

People who have had a stroke should be prescribed a program of exercise to aid their recovery and boost the rehabilitation process, according to a recommendation from the American Heart Association and the American Stroke Association.

Writing in the journal Stroke, their statement said physical activity can be hugely beneficial for survivors in reducing disability and preventing further episodes. In addition, it could also improve their mental health, particularly for people who may be at higher risk of fatigue or depression. However, exercise is underused by healthcare professionals, with many survivors leading inactive lifestyles after having a stroke and being advised to rest for too long.

Lead author Sandra A Billinger said stroke patients need help to develop the skills and confidence necessary to start and maintain an exercise program. It is recommended that stroke survivors should exercise three times a week for at least 20 minutes, but this may depend on the functional capacity of the individual. Indeed, shorter bursts may be more beneficial and better tolerated.
Migraine

What is a migraine?
While many people use the term “migraine” to describe any severe headache, “migraine” headache results from certain specific physiologic changes occurring within our brain culminating in characteristic pain and associated symptoms. Migraine headaches are usually associated with sensitivity to light, sound, and smells. Additionally, many patients experience nausea or vomiting. While typically the headache of a migraine involves only one half of the head, some patients may experience pain bilaterally. Typically, migraine headache is described as throbbing or pounding and is made worse with physical exertion.

Prior to the onset of their headache, some patients with migraines experience specific warning symptoms or an aura. These warning symptoms can range from flashing lights or a blind spot in one eye to numbness or weakness involving one side of the body. The aura may last for several minutes, and then resolves as the head pain begins or may last until the headache resolves. These symptoms can be frightening as they mimic the symptoms of a stroke.

What are the risk factors for migraine?
About 25% of people experience a migraine headache at some point in their lives. Most migraineurs are females. It is estimated that after adolescence, the ratio of female to male migraineurs is about 3:1. Besides, there is often a strong family history.

What causes migraines?
The specific cause of migraine is not yet known. There may be fluctuations in certain neurotransmitters or chemicals that send messages between brain cells. These changes may lead to migraine headaches.

What triggers migraines?
Many factors have been identified as migraine triggers. The normal hormone fluctuations which occur with regular menstrual cycles may predispose some women to experience migraine headaches (menstrual migraine). Some types of oral contraceptives and various foodstuffs - cheese, food preservatives, monosodium glutamate, artificial sweeteners, chocolate, and even dairy products - have been implicated in triggering migraine headaches in susceptible individuals. Oversleeping, stress, or exposure to strong stimuli such as bright lights, loud noises, or strong smells may trigger migraine. However, not every patient with migraines will experience headache when exposed to such triggers. If a person is unsure what his or her specific triggers might be, maintaining a ‘headache diary’ is beneficial to identify those individual triggers.

How are migraines diagnosed?
According to the International Classification of Headache Disorders II (ICHD-II), a patient must have had at least five headache attacks fulfilling the following criteria:

1. Headache attacks lasting 4 to 72 hours
2. The headache has at least two of the following characteristics:
   o Unilateral location
   o Pulsating quality
   o Moderate to severe pain intensity
   o Aggravation by or causing avoidance of routine physical activity (for example, walking or climbing stairs)
3. During the headache, at least one of the following characteristics:
   o Nausea and/or vomiting
   o Photophobia and/or phonophobia
4. The headache cannot be attributed to another disorder

How are migraines treated?
According to the International Classification of Headache Disorders II (ICHD-II), a patient must have had at least five headache attacks fulfilling the following criteria:

1. Headache attacks lasting 4 to 72 hours
2. The headache has at least two of the following characteristics:
   o Unilateral location
   o Pulsating quality
   o Moderate to severe pain intensity
   o Aggravation by or causing avoidance of routine physical activity (for example, walking or climbing stairs)
3. During the headache, at least one of the following characteristics:
   o Nausea and/or vomiting
   o Photophobia and/or phonophobia
4. The headache cannot be attributed to another disorder

What is the prognosis for migraines?
Treatments for migraines include oral medications (such as propranolol, verapamil, and flunarizine), certain anti-convulsive drugs like divalproex sodium, topiramate and gabapentin may be used. Antidepressants like amitriptyline and venlafaxine have been tried. Some patients who experience more than 15 headache days every month might benefit from Botox injections.

The specific medication which is selected for a patient is dependent on many other factors, including age, sex, blood pressure, and other pre-existing medical conditions.

What is the treatment for migraines?
What is the treatment for migraines?
Myocardial Infarction (Contd)

What is the treatment for heart attack?
The American College of Cardiology Foundation (ACCF) and the American Heart Association (AHA) task force recommends a treatment guideline that they consider as a preferred strategy to treat heart attacks: PCI (Percutaneous Coronary Intervention) or stenting is emphasized.

The 2013 ACCF/AHA guidelines for treatment of a heart attack are summarized as follows:

1. Ideally, transport patient to a PCI-capable hospital; if not PCI capable, transfer patient as soon as possible and less than 120 min; if anticipated transfer is more than 120 min, give fibrinolytic agent within 30 min of arrival
2. Send to cardiac cath lab
3. Diagnostic angiogram
4. PCI (Percutaneous Coronary Intervention) also termed stenting or stent placement
5. If re-occlusion occurs or perfusion fails in a patient given a fibrinolytic, arrange transfer to a PCI-capable facility; for other patients treated with a fibrinolytic, transfer to a PCI facility within about 3-24hrs
6. If step 5 occurs, step 3 should follow at a PCI-capable facility were either medical therapy, a PCI or a CABG should be done. Patients who are not candidates for PCI therapy usually undergo medical or surgical (CABG) therapy.

What about heart attacks in women? What are the risk factors for heart attack in women? Coronary artery disease (CAD) and heart attacks are erroneously believed to occur primarily in men. Although it is true that the prevalence of CAD among women is lower before menopause, the risk of CAD rises in women after menopause. At age 75, a woman’s risk for CAD is equal to that of a man’s. CAD is the leading cause of death and disability in women after menopause. The risk factors for developing CAD in women are the same as in men and include:

1. Increased blood cholesterol,
2. High blood pressure,
3. Smoking cigarettes,
4. Diabetes mellitus, and a
5. Family history of coronary heart disease at a young age.

Smoking cigarettes
Even “light” smoking raises the risk of CAD. In one study, middle-aged women who smoked one to 14 cigarettes per day had a twofold increase in strokes (caused by atherosclerosis of the arteries to the brain) whereas those who smoked more than 25 cigarettes per day had a risk of stroke 3.7 fold higher than that of nonsmoking women. Furthermore, the combination of smoking and the use of birth control pills increase the risk of heart attacks even further, especially in women over 35.

Cholesterol treatment guidelines in women
Current NCEP (National Cholesterol Education Program) treatment guidelines for desirable cholesterol levels are the same for women as for men.

What is “new” in heart attack?
Increased public awareness about heart attacks and changes in lifestyle have led to a dramatic reduction in the incidence of heart attacks during the recent past. Newer drugs such as Reopro and Integrelin have also played a role in improving the outcomes. More effective versions of clot-busting drugs have been developed.

Recently, even paramedics are doing ECGs, diagnosing a heart attack, and shifting patients directly to hospitals that have the ability to do PTCA and stenting. This can save time and reduce damage to the heart.

At present, the accepted best treatment for a heart attack is prompt identification and diagnosis, and transport to a hospital that can perform prompt catheterization and PTCA or stenting within the first 90 minutes of the cardiac event.

Recent data has shown that lowering blood LDL levels even further than previously suggested may further decrease the risk of heart attacks. Research also has shown that inflammation may play a role in the development of atherosclerosis, and this is an active area of current investigation. There also is early evidence that with genetic engineering it may be possible to develop a drug that can be administered to clear plaques from arteries (a “scavenger molecule”).

The key take-home messages include:

1. High degree of suspicion – regardless of age and sex of the patient as heart attacks are not uncommon in the young and are equally common in ladies.
2. Promptly shifting the patient to PCI-capable hospital so that PCI and stenting can be undertaken as quickly as possible, preferably within the first 90 minutes to minimize the damage to heart muscle.
3. Give fibrinolytics and clot-busters
4. Start statins and lower the levels even further (LDL-C: 70-100 mg%) or
5. Monitor the heart function (2-D Echo) and lipids periodically.
6. Make lifestyle changes.
Prostate cancer diagnosis may be more accurate with semen test

Prostate cancer is one of the most common cancers in men and a major cause of cancer-related deaths. Yet it is tricky to diagnose - the commonly used PSA test can result in overdiagnosis and unnecessary further procedures. Now, new research led by the University of Adelaide in Australia promises to improve the accuracy of prostate cancer diagnosis with the help of biomarkers in seminal fluid.

Writing in the journal Endocrine-Related Cancer, the researchers describe how they analyzed seminal fluid samples from 60 men and found small molecules called microRNAs were “surprisingly accurate” at indicating which men had prostate cancer and how severe it was.

The problem with the current PSA (prostate specific antigen) test for prostate cancer is that, while it is very sensitive, it is not highly specific for prostate cancer. For instance, it might be positive for non-cancerous conditions such as prostatic hyperplasia (BPH) and prostatitis. This results in many unnecessary biopsies and, perhaps more seriously, in substantial over-diagnosis and over-treatment of slow-growing, non-lethal prostate cancers that are probably best left alone and just monitored under a so-called “watchful waiting” regime.

“Biomarkers that can accurately detect prostate cancer at an early stage and identify aggressive tumors are urgently needed to improve patient care,” says lead author Dr. Luke Selth, a Young Investigator of the Prostate Cancer Foundation in the US.

One biomarker could differentiate between higher and lower grade tumors. When they analyzed the seminal fluid samples, the team discovered a number of microRNAs known to be increased in prostate cancer. MicroRNAs are small non-coding molecules that are important for controlling gene expression. They were surprised to find that some of the microRNAs were more accurate than a PSA test at detecting which of the men had cancer and which did not. They also found one specific microRNA - called miR-200b – could differentiate men with low tumors from those with higher grade tumors.

A single shot of antibiotic ‘could be new MRSA treatment’

People who have a weakened immune system are more at risk from getting serious staph infections, such as MRSA (methicillin-resistant Staphylococcus aureus). MRSA infections can be severe if they enter the bloodstream, heart, lungs or other organs.

Researchers at Duke Medicine in Durham, NC, have found that a new single-dose antibiotic - oritavancin - is as effective as the current standard treatment for MRSA, which involves a twice-daily infusion being given for up to 10 days. A persistent problem with antibiotic resistance is that patients tend to stop taking antibiotics once they feel better. In these instances, it is possible for some bacteria to survive and add to the growing menace of antibacterial resistance.

One advantage of the new drug, called oritavancin, is that it has a long half-life, which allows for a single-dose treatment as the drug will continue working to kill bacteria over the whole treatment period.

“Having a single-dose drug could potentially prevent hospitalizations or reduce the amount of time patients would spend in the hospital,” says Dr. G. Ralph Corey, lead author of the study.

Reporting their results in the New England Journal of Medicine, the researchers found that a single intravenous dose of oritavancin was as effective as vancomycin. The two drugs also reported similar performance in curing infection and reducing the wound area by 20% or more in the first 48-72 hours of treatment.