Role of Nutraceuticals in Pregnancy

Non Invasive Ventilation

Tackling Renal Calcyceal Stones: A Challenge for Rural Surgeons

Letter to The Editor

Journal Scan

Obituary

Editor:

Dr Dilip Gupta

For Circulaion to Members only
ASSOCIATION OF RURAL SURGEONS OF INDIA

PRESIDENT:

Dr. Samar Kumar Basu
A-258, Shivalk, Malviya Nagar
New Delhi – 110017
E-mail: skbasa2004@yahoo.co.in

VICE PRESIDENT:

Dr. B. D. Patel
Shushrut Hospital, Khetiya Road,
Shahada, Dist. Nandurbar - 425 409 (M.S)
E-mail: drbdpatel.ms@gmail.com

SECRETARY:

Dr. Rajesh R. Tongaonkar
Dr. Tongaonkar Hospital,
Dondaicha,
Dist. Dhule (MS) – 425 408
Email: rajesh@tongaonkar@rediffmail.com

TREASURER:

Dr. Shashank R. Kulkarni
Kulkarni Hospital,
Dongargaon Road, Shahada,
Dist. Nandurbar - 425 409 (M.S)
E-mail: drshashkulk@yahoocom

JOINT SECRETARY:

Dr. Ram Prabhu
Mukund Maternity & Surgical Nursing Home, Mukund Nagar CHS,
Marol Pipe Line, Andheri Kurla Road,
Andheri (E), Mumbai - 59
E-mail: aprabhoo@hotmail.com

G. C. MEMBERS:

Dr. Sanjib Kumar Mukhopadhyay
38U, Sultan Alam Road,
Tollygunge, Kolkata - 33
E-mail: sanmukh@cal2.vsnl.net.in

Dr. V. K. Gopal
66 C DDA Flats, Masjid Moth,
Phase 2, New Delhi-48
E-mail: v_k_gopal2002@yahoo.co.in

Dr. Sukumar Maiti
Village - Bahargram,
Post- Panskura R. S Mindnapur,
Dist. Midnapur (West Bengal) – 721152
E-mail: sukumar.maiti@hotmail.com

Dr. Lalitha Regi
Tribal Health Initiative, Sittilingi,
Dist. Dharmapuri,
Tamil Nadu 636906
E-mail: office@tribalhealth.org

Dr. Gnanraj Jesudian
Karunya Rural Community Hospital
Karunya Nagar,
641114 COIMBATORE, T N
E-mail: gnanrajraj@gmail.com

Dr. C. D. Mahajan
Accident Hospital, Viral Vihar,
College Road, Nandurbar-425 412
E-mail: cdmahajan@hotmail.com

Dr. Manhar Shah
E-702, Sita Vihar, L. B. S. Road,
Naupada, Thane(W)
E-mail: manilashah@hotmail.com

Dr. Ram Kumar
309, Sector 21, Panchkula (Haryana)
E-mail: drramkumar_51@live.com

Dr. Rahul Wagh
Aasha Datta Maternity Hospital,
Shahada (Nandurbar) - 425 409 (M.S)
E-mail: drrahulwagh@gmail.com

IMM PAST PRESIDENT:

Dr. Sanjay Shivade
Savitali Hospital,
Lonand, Khandala,
Dist. Satara – 415 521
E-mail: drshivade@rediffmail.com

BULLETIN EDITOR:

Dr. Dilip Gupta
Department of Surgery,
Mahatma Gandhi Institute of Medical Sciences
Sevagram – 442 102 Wardha (MS) India
E-mail: drrdilipgupta@hotmail.com
Non invasive ventilation (NIV) has come a long way since the start of the century when positive end-expiratory pressure ventilations were used for the first time to treat cardiogenic pulmonary edema and other forms of non-hypercapnic respiratory failure. Earliest first ever apparatus of NIV was invented by the Scottish physician John Dalziel (1838) in which the patient was enclosed in a whole body airtight ventilator box up to the neck and received cyclic positive and negative pressures. NIV refers to the administration of ventilatory support without using an invasive artificial airway (endotracheal tube or tracheostomy tube). It is also called as the “mask ventilation”. NIV has been proven to be an effective prophylactic or curative treatment strategy to reduce intubation rates, nosocomial infections, intensive care unit and hospital lengths of stay, morbidity and mortality in postoperative patients.

This time we have ARSICON at Midnapore, West Bengal. Hope to see you all there.

Dr. Dilip Gupta
Editor
CONTENTS

From The Desk of Editor

Original Article
Role of Nutraceuticals in Pregnancy
Dr. S. K. Basu 1

Review Article
Non Invasive Ventilation
Vishakha Jain, O.P.Gupta 8

Technique
Tackling Renal Calcyceal Stones: A Challenge for Rural Surgeons
Dr. J. Gnanaraj Dr. Sungtiakum Jamir Dr. Nandamani 13

Letter to The Editor
Dr. R. D. Prabhu 16

Journal Scan
17

Obituary: Dr. (Mrs.) Shipra Banerjee 21
Role of Nutraceuticals in pregnancy

Dr. S. K. Basu*

The key stages in a female’s life include infancy, childhood, adolescence, adulthood and pregnancy. Nutritional inadequacies at any of these stages, from intrauterine period to adulthood, have serious consequence on entire life cycle of a female. While adequate nutrition with low calorie intake and lack of proper health care during pregnancy increases the chance of high maternal mortality due to various pregnancy related complications, it also results in low birth weight (LBW) newborn. This newborn in turn has more chance of high mortality rate, impaired mental development and increased risk of adult chronic diseases in later part of life. Lack of proper nutrition, inadequate and untimely feeding at this stage will lead to inadequate catch-up growth. These babies are also prone to frequent infections. Further nutritional inadequacy, if allowed to continue, will result in a child with stunted growth and reduced mental capacity. A child with chronic malnutrition ultimately results in stunted adolescent with reduced physical capacity and fat free mass. With this state of physical health and nutritional inadequacies, if she is allowed to conceive, there will be poor pregnancy out come. Therefore malnutrition in pregnancy is a life–cycle issue.

At no other time in woman’s life is nutrition as important as before, during and after pregnancy because of peri-conceptional nutrient need, pregnancy increased nutrient demand and finally increased nutrient need due to lactation. Hence nutrition is the foundation of life throughout pregnancy and beyond to achieve the goal of healthy mother and healthy baby.

There used to be a time when people had plenty of option to fulfill their nutritional need even though they had little knowledge about the sources of various nutrients. In pollution free environment there was availability of good quality food with no pesticides or chemical adulteration in it. Today most of the food like milk, vegetables, fruits, spices, pulses and many more are badly adulterated. Some of them are very injurious to health, more so during pregnancy state, as they contain harmful chemicals which may cause cancer to the babies.

Emerging understanding about nutrition in pregnancy suggests that maternal nutritional status at time of conception is an important determinant to outcomes of pregnancy. Intrauterine nutritional environment affects health and development of the fetus throughout life. Healthy pregnancy is defined as one without physical or psychological pathology in the mother or fetus which results in the delivery of a healthy baby. Unfortunately overall nutritional status of pregnant women in India today is far from satisfactory. Survey result of dietary intake of pregnant

---

*President ARSI, New Delhi
women showed 18%, 34%, 85%, 57% were consuming less than 50% of calories, proteins, iron and b-carotin respectively as compared to their Recommended Daily Allowance (RDA). With calorie level < 50%, many of the essential nutrients level in the body was found to be much lower compared to women who had a higher calorie intake.

In a situation where food adulteration is rampant on top of lesser caloric intake, nutraceuticals can play an important role to provide required essential nutrients to the pregnant mothers and during lactation period.

**What are nutraceuticals?**

Nutraceuticals are dietary supplements containing concentrated form of presumed bioactive substance originally derived from a food, now present in a non-food matrix, used to enhance health in dosages exceeding those obtainable from normal foods. Dietary supplements may be vitamin or minerals, herb or other phytochemical, amino acid, dietary substance to supplement the diet by increasing the total dietary intake (Enzymes), concentrates, metabolites, or extract of any of the foregoing constituents. A phytochemical is a chemical that acts as nutraceuticals or dietary supplement that comes from plants. (Examples: Isoflavones from Soy, Antioxidants from vegetables, Lycopene from Tomatoes etc.)

Pregnancy state has many challenges. Amongst them neural tube defects (NTDs), spontaneous abortions, recurrent miscarriage, IUGR, pre-eclampsia, preterm labor, IUD, placental abruption and other congenital defects are commoner. Many of these challenges can be fought and intercepted with proper nutritional intervention at appropriate time, at appropriate stage of pregnancy. Aside from the appropriate things that a pregnant mother needs to do, there is also a need for her to know the best supplements that she needs to take in order to achieve a healthy pregnancy.

There are four pillars of a healthy pregnancy which demands particular nutritional need. They are:

1) Brain development (dependent on DHA, choline, Iodine, Folic acid)
2) Growth (dependent on protein, calcium, Vit D, fat)
3) Immunity (dependent on Vit C, E, Zinc)
4) Healthy digestion (Fructose oligosaccharides)

**Folic acid:**

Folic acid may be considered as "magic bullet in pregnancy". A tiny tablet of 5 mg folic acid daily during pre-conceptional period and early pregnancy prevents or drastically reduces the chances of having neural tube defect (NTDs) in the growing baby. NTDs are the 2nd most congenital anomaly after congenital heart defect. The defect develops between 17th and 30 days after conception i.e. usually before a woman knows she is pregnant. Each year in US alone about 3000 pregnancies are affected by neural tube defects (either spina bifida or anencephaly). Folic acid might help to prevent some other birth defects such as cleft lip and palate, heart defects, urinary tract anomaly, limb defects etc. It also plays an important role in nucleic acid synthesis thus indirectly helping in cell division and cell growth. It helps in the reduction of homocysteine in the blood and thereby minimizes the risk of having preterm delivery, LBW, IUGR etc. Recommended dose is 0.4 mg daily from supplements or fortified food or a
combination of the two in addition to consuming folate from dietary sources. However marginal intake during pregnancy impairs cellular growth. 5-methyltetrahydrofolate (5-MTHF) is the biologically active form of folic acid or folate and is now easily available for use. In conjunction with vitamin B12, 5-MTHF acts as a methyl donor for the conversion of Homocysteine to Methionine. This process of methyl donation plays a vital role in numerous processes of the body.

Choline
Choline is one of the newest nutrients to be added to the list of human vitamins. It was only added to the list of required nutrients by the National Academy of Sciences (NAS) in 1998. Choline is an important nutrient that helps brain cells develop properly. Since it has a limited capacity for synthesis inside the body, it has to be supplemented either in the form of diet or Nutraceuticals. Egg and fatty meat are good source of choline. It is essential for membrane synthesis, methylation reaction and neurotransmitter synthesis as Choline is the precursor molecule for the neurotransmitter acetylcholine, which is involved in many functions including memory and muscle control. Supply of choline is critical during pregnancy and lactation because store is easily depleted due to high demand in pregnancy and lactation. Maternal dietary deficiency diminishes new nerve formation, increases neural cell death in the fetal brain. Recommended dose is 425mg/day.

Docosahexanoic acid (DHA)
DHA belongs to Omega-3 fatty acids group. Omega-3 fatty acids are considered essential fatty acids (EFA). EFA means that they are essential to human health but cannot be manufactured by the body. Therefore, they must be obtained from an outside source. The developing fetus receives DHA from the mother through the placenta during pregnancy and through breast milk after birth. Maternal supplementation results in increased visual and mental development of infants as DHA makes up 40% of fatty acids in brain and 60% fatty acids in retina. 70% of brain cells are developed before birth. The retina develops rapidly in the final months of pregnancy and during early childhood. Therefore the need is greatest during most rapid periods of brain development (3rd trimester), last trimester of pregnancy and through 2 years of age. Fetus accrues 50 - 60 mg DHA/day in 3rd trimester. Expert panels recommend DHA intake of 200-300 mg per day during stage III of pregnancy. (B.S. Anklesaria staging).

Studies have shown with normal DHA level in the body, a woman is 2.6 times less likely to develop pregnancy-induced hypertension. In some studies DHA supplementation had prevented prematurity. Studies demonstrated up to (average) 6 days increase in gestational age. A meta-analysis of various studies at Harvard estimated that increasing maternal DHA raised child IQ by 1.3 points. Maternal DHA supplementation in several studies resulted in better mental development, psychomotor development and attention skills in infants, 2-5 years of age. DHA deficiency during gestation decreases serotonin and dopamine in the brain, central factors causing depression. The incidence of postpartum depression (PPD) has an inverse relation to DHA status after pregnancy. Other nutrients involved in PPD are iron, folic acid, riboflavin, Vit B6 and Vit B12. 

Walnuts, Sardines, Salmons, Tofu, soybeans, Shrimps and cauliflower are

Rural Surgery Vol. 10 No. 2 3 Sept. - Dec. - 2014
some of the dietary sources for DHA.

**Iodine**

Iodine plays an important role in regulating the thyroid gland and metabolism. In pregnancy, iodine also helps baby's brain and nervous system develop. In fact, iodine deficiencies are the single most important cause of preventable mental retardation and brain damage worldwide. A lack of iodine during pregnancy has also been linked with an increased risk of miscarriage, preterm delivery, and stillbirth.

In pregnancy about 220 micrograms (mcg) of iodine per day is required and the requirement further increases during breast feeding to about 290 mcg. These doses not necessarily have to be taken every day. Instead, one should aim for that amount as an average over the course of a few days or a week. Though majority of women may not need supplements as it is easy to meet the requirement through food, we must remember many women from rural India may not have access to iodized salt. In fact iodine deficiency has been found in good number of pregnant women in a city like Delhi. Considering the fact that iodine is responsible for infant's cognitive development and deficiency, causes impaired skills and intellectual development in children, one should supplement it at very early stage of pregnancy after doing proper laboratory test.

**Iron**

Anaemia affects nearly half of all pregnant women in the world: 52% in developing countries compared with 23% in the developed world. The most common causes of anaemia are poor nutrition, deficiencies of iron and other micronutrients, malaria, hookworm disease, and schistosomiasis; HIV infection and haemoglobinopathies are additional factors. More than half of the pregnant women in the country are mildly anemic and 42.6 percent are moderately anemic. WHO defines severe anemia as Hb < 7gm/dl. While level of risk with moderate anemia (7-11 gm/dl) is not increased, severe anemia in pregnancy increases the risk significantly and is associated with low birth weight new born, premature new born, increased Perinatal mortality and increased maternal mortality and morbidity. Average non pregnant adult lose 800µg iron /day and approximately extra 500µg iron lost /day during menses. There is an increased need of iron supplementation during pregnancy. Recommended dose of routine iron supplementation during pregnancy is 60mg elemental iron +5µg Folic acid. Most of the conventional supplemental forms of Iron come with GI side effects such as gastric irritation, nausea, vomiting, bloating etc. and do not offer adequate elemental iron and/or rise in hemoglobin. Ferrous Ascorbate is a prototype of modern Iron salts and offers the highest Iron bioavailability as ascorbic acid enhances absorption of iron.

**Calcium**

Significant changes in maternal vitamin D and calcium metabolism occur during pregnancy, to provide the calcium needed for fetal bone growth. Approximately 25-30 g of calcium are transferred to the fetal skeleton by the end of pregnancy, most of which is transferred during the last trimester. It has been estimated that the fetus accumulates up to 250 mg/d calcium during the third trimester. Women loose 300-400 mg calcium daily through breast milk. This constitutes 5-10% loss of skeletal mineral content during 6 months of exclusive lactation.
Low maternal calcium intake might adversely affect fetal development and lead to severe loss of maternal bone mineral content during pregnancy. Therefore it is important to recommend Calcium supplementation during pregnancy. All studies have uniformly documented low dietary calcium intake compared to recommended daily / dietary allowances (RDA) by ICMR.

Calcium supplementation with at least 1 g/day (WHO recommends 1.5–2.0 g/day) during pregnancy reduces the risk of gestational hypertension, pre-eclampsia, preterm birth and the composite-outcome of maternal death or severe morbidity, particularly in women with low dietary calcium intake or at high risk of preeclampsia. Calcium citrate malate has been shown to have greater bioavailability compared to other forms and can be consumed in an empty stomach and still be sufficiently absorbed. Calcium also interacts with iron, zinc, magnesium and phosphorus, all of which are important micronutrients needed during pregnancy. Calcium inhibits iron absorption in a dose-dependent and dose-saturable fashion, which suggests that calcium supplementation should be separated in time during the day from the recommended daily iron+folic acid supplementation, when used.

The most exciting challenge of nutraceuticals therapy in pregnancy is the prevention of PIH. Many and varied nutraceuticals have over the years been investigated for the prevention of PIH. However, large double blind studies (>30) have so far supported the claims of mainly two of these – CALCIUM and ANTIOXIDANTS. There is an inverse co-

relationship between maternal calcium intake and the incidence of PIH. Many trials show that in PIH cases there is decrease in maternal serum 1, 25-dihydroxy Vit D concentration, Serum ionized calcium concentration and urinary calcium excretion.

**Action of Nutraceuticals in PIH**
Many of the nutraceuticals inhibits PIH by calcium channel blocking activity, antioxidant pathway, anti-inflammatory pathway and by Immunomodulation. They inhibit production of pro-inflammatory cytokines in vascular intima tissue; reverses impaired NO production and thereby creating a positive impact on platelet aggregation, Triglycerides and LDL.

Nutraceuticals like Selenium, Vit E, C, Zinc, and Lycopene acts as antioxidants and prevent PIH by preventing damage to the cell membrane, quenches free radicals, Prevents the formation of ROS, minimizes oxidative stress related damage to the other molecules like DNA, Lipid, and Protein, thus Protect against the damaging effect of free radicals. By combating oxidative stress, they prevent IUGR, NTD, and placental abruption. It is well known that numerous aspects of cellular metabolism are Zinc dependent. Zinc plays an important role in growth development, immune response, neurological function, reproduction.

Studies have observed that with Antioxidants there is less incidence of Pre eclampsia (8.6% vs. 17.7%), significantly higher fetal Wt and less incidence of IUGR (12% vs. 23.7%)

**L-Arginine (Amino acid)**
Arginine, also known as L-Arginine, is classified as a conditional amino acid. That
means our body can normally make it from other nutrients, but must obtain it from food when under stress, for example, due to illness. This amino acid, which supports wound healing, normal blood pressure and a healthy cardiovascular system, is obtained naturally from a wide variety of foods. Protein-containing foods supply Arginine. Among the animal-based foods that contain this amino acid are meats, poultry, fish, seafood, eggs and dairy products such as milk, yogurt and cheese. Nuts, seeds, oats, beans and wheat germ are good plant-based sources of Arginine. Being the precursor of nitric oxide (NO), it increases bioavailability of NO and promote endothelial synthesis. Studies have shown that with high doses (6 gm) L-Arginine normalizes BP in PIH. It improves uteroplacental blood Circulation, increases oxygen delivery to fetus, accelerates fetal growth, reverses IUGR and lowers the incidence of RDS. There is higher Apgar score with better umbilical cord acid-base status.

**Vitamin B12, Vitamin B6**
They act as co-factor in methylation and transsulfuration of Homocysteine in the blood during pregnancy thus preventing the risk of preeclampsia. B12 deficiency is associated with functional folate deficiency because of trapped MTHF (Methyl tetra hydro folate). B6 has a Positive correlation with birth Wt. of the new born and needed for CNS formation of fetus.

**Protein in Pregnancy**
Amino acids form Protein is the building blocks of body cell of both mother and baby. The demand increases in 2nd and 3rd trimester (70 gms/day). Balanced protein energy supplements Reduces the risk of small for gestational age baby

**Oligofructose (FOS)**
For healthy digestion during pregnancy Fructose oligosaccharides are very essential nutrients. They have Prebiotic effect which serves as a substrate for Micro flora and increases GI tract health. This in turn helps in better absorption of other nutraceuticals including calcium. Vegetable sources are bananas, onions, Garlic, Chicory roots, wheat, barley etc.

**Nutrition during lactation**
Breast milk contains DHA (Docosahexanoic acid), AA (Alpha linolenic acid), Taurine, choline, Calcium and Vitamin D. They are responsible for building blocks of brain and eye development, support overall mental development and functioning and for bone development of the new born. Breast milk also contains fat, protein and carbohydrate which are easily absorbed and digested and many protective factors that protect the infant from infections. Human milk feeding is adequate as the sole source of nutrition for 6 months, provided maternal diet and reserves are adequate and a sufficient quantity is transferred to the Infant. Milk secreted in 4 months represents an amount of energy roughly equivalent to the total energy cost of pregnancy. Therefore as with energy, recommended intakes of minerals and several vitamins are higher in lactation than in pregnancy.

**Special concern**
Maternal health care providers may note that excess of caffeine intake during pregnancy may interfere with sleep, contributes nausea, light headedness, increase urination leading to dehydration. Veg. Diet often causes low intake of iron, B12, Vitamin D. Pica (an unusual appetite for substances largely non-nutritive, such as ice, clay, chalk, dirt, or sand) may affect
intake of nutrients leads to constipation, nausea.

Providers should inform patients that it would be prudent to err on the side of caution regarding use of herbal products just before and during pregnancy because little is known about their potential risk.

Conclusions
A healthy balanced diet that contains adequate amount of nutrients is essential for the development of a healthy baby. During pregnancy and after delivery a mother’s health goes through many physiological changes, including a need for increased nutrients and energy. Concentration, time and duration of supply of each Nutraceuticals influence overall pregnancy outcome including maternal health and fetal health. The concentrations of active ingredients can be increased by manipulating the food. Diet rich in Nutraceuticals along with stress reduction and maintenance of good health status by judicious diet, drugs, and hygiene all through pregnancy will maximize favorable pregnancy outcome and reduce substantially pregnancy related risks.

References:
1) Ramesh Chellan Lopamudra Paul, J population and social studies Volume 19 Number 1 July 2010
4) Salem Jr al Lipids 2001J
5) Bergmann et al, Ann Nutr Metb 2008
6) Yuhas et al, Lipids 2006:
8) Handbook of nutrition and pregnancy, Carol J
9) Reviews in Obstetrics & Gynecology Vol. 1 No. 4 2008
10) Nutrients 2012, 4(7), 799-840;
12) BMC Public Health. 2011 Apr 13; 11 Suppl 3:S17
13) Asia Pac J Clin Nutr 2008;17(2):276-279
14) Pharma Times:2008Sept; 40(9)
Non Invasive Ventilation

Vishakha Jain*, O.P.Gupta**

Introduction:
Non invasive ventilation (NIV) has come a long way since the start of the century when positive end-expiratory pressure ventilations were used for the first time to treat cardiogenic pulmonary edema and other forms of non-hypocapnic respiratory failure. Earliest first ever apparatus of NIV was invented by the Scottish physician John Dalziel (1838) in which the patient was enclosed in a whole body airtight ventilator box up to the neck and received cyclic positive and negative pressures¹. In 1907, Heinrich Drager received a patent on the “Pulmotor”- a non-invasive ventilator. In 1928 Philip Drinker used the first electrically powered body ventilator – “the iron lung” which consisted of a one ton metal cylinder encasing a supine patient neck down². In 1931, J. H. Emerson, of Cambridge, Massachusetts, constructed a simpler, quieter, lighter and less expensive version of the iron lung that could be manually operated in the event of power failure. Drinker unsuccessfully sued Emerson for patent infringement, and the Emerson lung became the predominant version for ventilator support of patients with respiratory paralysis caused by poliomyelitis, with thousands manufactured between 1930 and 1960². Negative pressure NIV was used extensively during the major poliomyelitis epidemics of the 1950’s, as well as later on in the chronic home care setting, but positive pressure NIV has become the accepted technique over the past quarter of a century³.

NIV refers to the administration of ventilatory support without using an invasive artificial airway (endotracheal tube or tracheostomy tube). It is also called as the “mask ventilation”. NIV has been proven to be an effective prophylactic or curative treatment strategy to reduce intubation rates, nosocomial infections, intensive care unit and hospital lengths of stay, morbidity and mortality in postoperative patients⁴. In this review we will try to focus on the types of NIV, rationale and indications of NIV, contraindications of NIV and role of NIV in specific situations.

Types of NIV:
Two types of NIV are commonly used: noninvasive continuous positive airway pressure (CPAP) and noninvasive positive pressure ventilation (NPPV) which delivers two levels of positive pressure (pressure support ventilation + positive end-expiratory pressure). Today, a wide variety of non-invasive ventilators are available which can be differentiated into two groups: sophisticated intensive care ventilators with a NIV option, and the less complicated NIV devices for use in the sub-acute and home care environment. The first group uses a high pressure gas inlet for both oxygen and air provided by a central gas supply, while the second group uses low and/or high pressure oxygen inlets only. For compressed air, these ventilators are equipped with either a blower or turbine technology. Turbine driven ventilators achieve higher inspiratory pressure and flow than blower operated devices, which

*Associate Professor, **Professor and senior consultant, Department of Medicine, Mahatma Gandhi Institute of Medical sciences, Sevagram, Wardha, Maharashtra

Figure 1: The NIV apparatus
are predominantly used for patients with OSA (obstructive sleep apnoea) in a home care setting.

**Continuous positive airways pressure (CPAP)**

It has the provision of positive airway pressure throughout all phases of spontaneous ventilation. This increases the functional residual capacity of the lungs by holding airways open and preventing collapse thus recruiting the collapsed alveolar units and increasing the functional residual capacity. The application of CPAP also causes the patient to breathe at higher lung volumes, making the lungs more compliant. CPAP is particularly useful for improving oxygenation in type 1 respiratory failure. It also results in decreasing preload and afterload thereby diminishing venous return and left ventricular systolic wall stress.

**Noninvasive positive pressure ventilation (NPPV)**

This is the name for the machines most commonly used to provide two levels of airway pressure. The patient’s inspiratory efforts trigger the ventilator to deliver decelerated flow in order to achieve a designed preset pressure. Ventilatory support ceases when the patient’s inspiratory flow falls by a fixed amount. Positive pressure is maintained throughout the respiratory cycle, with a higher pressure during inspiration. This results in reduced work of breathing and an improvement in tidal volume and CO₂ removal; it is therefore particularly useful in the treatment of type 2 respiratory failure.

**Rationale and indications of NIV:**

The resurgence of NIV after the phase of proliferation of invasive ventilation was mainly because of complications of invasive ventilation like: complications directly related to the process of intubation and mechanical ventilation (adverse drug effects, failed intubation, risk of aspiration of gastric contents, airway trauma), those caused by the loss of airway defense mechanisms (risk of ventilator associated pneumonia-VAP), and those that occur after removal of the endotracheal tube (tracheal stenosis, chronic sinusitis, vocal cord damage).

By averting intubation NIV decreases all these problems. In contrast to invasive ventilation, noninvasive ventilation leaves the upper airway intact, preserves airway defense mechanisms, and allows patients to eat, drink, verbalize, and expectorate secretions. The latest evidence suggests that NIV reduces infections (VAP and sinusitis), is more convenient and portable at no greater cost or even less than endotracheal intubation and can also be administered outside intensive care settings.

**Advantages of NIV compared to conventional ventilation**

Compared with conventional ventilation, NIV is a relatively inexpensive and simple technique which prevents the need for conventional ventilation in some patients and improves survival. Major advantages include:

1. Avoiding many of the complications associated with conventional invasive ventilation.
2. Avoiding the need for sedation.
3. Easier communication with patient.
4. Requires less intensive nursing care.
5. Avoid the resistive work imposed by the endotracheal tube.

**Disadvantages**

1. System: Slower correction of gas exchange abnormalities, increased initial time commitment, gastric distension (occurs in <2% patients)
3. Lack of airway access and protection: Suctioning of secretions, aspiration.

The aims of NIV are: (1) to partially compensate for the affected respiratory function by reducing the work of breathing, (2) to improve alveolar recruitment with better gas exchange (oxygenation and ventilation) and (3) to reduce left ventricular after load increasing cardiac output and improving hemodynamics.

**Indications for the use of NIV**

NIV is commonly used for the treatment of respiratory failure from:

1. Exacerbation of chronic obstructive airways disease (COPD)
2. Pulmonary edema
3. Respiratory failure in immunocompromised patients. E.g. AIDS, malignancy
4. Weaning from conventional ventilation and prevention of need for reintubation in high risk patients - resulting in shorter duration of ventilation, reduced complications, reduced hospital stay and reduced mortality
5. Chest trauma
6. Asthma.

**Contraindications to NIV (NPPV)**
1. Unconscious patient
2. Respiratory arrest
3. Medical instability
4. Inability to protect airway
5. Excessive secretion
6. Agitation or lack of cooperation
7. Inability to fit the mask
8. Facial fractures
9. Following oesophagectomy (risk of anastomotic breakdown due to increased pharyngeal/oesophageal pressures)
10. Recent upper airway or gastrointestinal surgery

**Role of NIV in specific situations:**

*Acute exacerbation of chronic obstructive pulmonary disease COPD*—
The efficacy of NIV in management of acute exacerbation of COPD has been proven beyond doubt in several clinical trials and has been designated as the first line of treatment for the same patients with type 2 respiratory failure. NIV at two levels pressure support and positive end-expiratory pressure (PEEP) delivers a positive inspiratory pressure swing in synchrony with patient’s inspiratory effort. A low level pressure during expiration balances the hyperinflation resulting in positive alveolar pressure at the end of expiration. NIV should be performed early in patients with hypercapnic respiratory failure and this in turn results in lesser endotracheal intubation, and long term benefits like decrease in readmission rates and the need for long term oxygen therapy. NIV should be initiated in patients with COPD if pH <7.35, PaCO2 > 6 kPa, respiratory rate >24 bpm. A very low arterial blood pH, marked alteration in mental status when NIV is started, and the presence of co morbid conditions or a high severity score characterize patients who experience NIV failure.

**Cardiogenic Pulmonary edema**—
CPAP raises intrathoracic pressure and improves arterial oxygenation and dyspnoea in patients with pulmonary edema. CPAP can both lessen the work of breathing substantially and improve cardiovascular function by decreasing the left ventricular after load in non preload-dependent patients. Several RCTs comparing CPAP or pressure support plus PEEP to standard medical treatment has found both therapies to be equivalent in terms of improvement in arterial blood gas levels and respiratory rate as well decrease in the rates of intubation.

**Preventive use of NIV after planned extubation**—
Even after a rigorous weaning assessment and spontaneous breathing trial (SBT) the re-intubation rated after planned extubation are as high as 24%. Re-intubation has its own complications like increased risk of infections, increased mortality, and increased duration of stay in intensive care units. NIV can be used during weaning from invasive ventilation in 3 ways. First, NIV can be used as an adjunct to early separation from invasive mechanical ventilation in patients who have achieved a minimal clinical and respiratory stabilization but who fail an SBT and need only transient low/intermittent ventilatory support. Second, NIV can be used as rescue therapy for patients who develop respiratory distress or failure soon after extubation. Third type of NIV use studied in weaning has been its early or preventive use right after planned extubation following tolerance of an SBT. This is applied with the intention of preventing post-extubation respiratory failure, which some patients might develop, and by extension re-intubation, with its associated risks.

**Community acquired pneumonia**—
Many studies with NIV in patients with pneumonia have showed mixed results. But a recent study by Confalonieri et al randomized 56 patients with severe community acquired pneumonia to receive NPPV plus conventional...
therapy or conventional therapy alone. Patients treated with NPPV had reduced intubation rates (21 versus 50%, p, 0.03) and a shorter duration of ICU stay (1.8 versus 6 days, p, 0.04) than did control subjects, although hospital lengths of stay and hospital mortality rates were similar.

NIV in Surgical case -
Intra-operative and post operative pulmonary complications are the major cause of mortality and morbidity. After the successful use of NIV in acute medical care, the option of NIV during acute respiratory failure intraoperatively and in immediate post operative pulmonary care has been explored by many studies. In a systematic review by Chiumento et al 22 the authors deliberated over 29 studies which met their inclusion criteria – 9 evaluated NIV in post-abdominal surgery, 3 in thoracic surgery, 8 in cardiac surgery, 3 in thoraco-abdominal surgery, 4 in bariatric surgery and 2 in post solid organ transplantation used both for prophylactic and therapeutic purposes. NIV improved arterial blood gases in 15 of the 22 prophylactic and in 4 of the 7 therapeutic studies, respectively. NIV reduced the intubation rate in 11 of the 29 studies and improved outcome in only 1.

In another RCT 23 which evaluated the duration of any effects of early initiation of short term pressure support NIV vs. traditional oxygen delivery via venturi mask in obese patients during their stay in the PACU. It was found that during the PACU stay, pulmonary function in the NIV group was significantly better than in the controls (p < 0.0001). Blood gases and the alveolar to arterial oxygen partial pressure difference were also better (p < 0.03), but with the addition that overall improvements are of questionable clinical relevance. These effects persisted for at least 24 hours after surgery (p < 0.05) 23.

Another retrospective study 24 evaluated the use of NIV in post surgical patients in a district general hospital. The authors analyzed case notes of 38 surgical patients who received NIV over a 9 month period – 28 following emergency surgery, 8 after elective surgery and 7 patients who did not undergo any surgery. The reasons for emergency surgery were bowel obstruction (n = 11), perforated viscus (n = 4), fixation of fracture (n = 4), pancreatic surgery (n = 3) and emergency oesophagectomy following perforation (n = 1). The operations performed in the non-emergency group were colectomy (n = 3), oesophagectomy (n = 2), gastrectomy (n = 2) and mastectomy (n = 1). The diagnoses in the patients who did not have surgery were pancreatitis (n = 3), abscess and sepsis (n = 3) and carcinoma of the ovary with ascites (n = 1). There was a past history of hypertension in 17 patients (45%), ischemic heart disease in 14 patients (37%) and COPD in 8 patients (21%). The commonest reasons for initiating NIV were chest infection (n = 15), acute respiratory distress syndrome, ARDS (n = 8), heart failure or fluid overload (n = 8), atelectasis (n = 4), respiratory depression (n = 2) and COPD (n = 1). It was concluded that NIV used on surgical wards may prevent ICU admission, and on the ICU itself, NIV may sometimes prevent endotracheal intubation. This study also suggested that NIV will increasingly be used on ICU or wards as a final measure of respiratory support in weak patients with a poor prognosis and in whom endotracheal intubation is thought unsuitable.

NIV and orthopedic surgery -
NIV can be used in the management of patients with orthopedic problems and with acute or chronic respiratory failure in whom the respiratory status excludes general anaesthesia. NIV has been successfully used in patients with respiratory problems and undergoing surgeries for fracture femur 25, total hip replacement etc under spinal anesthesia.

NIV and cardiac surgery –
Post-operative respiratory restrictive syndrome is common after cardiac surgeries due to various reasons like anaesthesia, cardiopulmonary by-pass, thoracotomy, diaphragm dysfunction, sternotomy, post-operative pain, fluid overload, massive transfusion and co-existing co-morbidities and cause increase in the hospital stay and poor survival 26. NIV could be applied pre-operatively or post-operatively to prevent acute respiratory failure, to prevent pneumonia by resolving or preventing atelectasis, and to wean patient off mechanical ventilation. In two large studies NIV reduced the incidence of atelectasis and improved lung volumes but without any effect on the ICU stay or the hospital stay 27.
Conclusions:
The resurgence of NIV in various clinical situations in emergency and acute medicine is promising and is still evolving. As per the latest evidence NIV is the first line of treatment for acute exacerbation of COPD. Also CPAP is proven beneficial in cases of acute pulmonary edema and surgical cases reducing the incidence of post operative respiratory complications and morbidity.

References:
Tackling Renal Calyceal Stones: A Challenge for Rural Surgeons

Dr. J. Gnanaraj  Dr. Sungtiakum Jamir Dr. Nandamani

INTRODUCTION
In India, the incidence of renal stones varies from 0.5% to 1.9% and has wide regional variations [1]. However, in some areas it could be as high as 7.6% [1]. Many of them present to rural surgeons when they are still in the renal calyces. Treating them is a big dilemma for the usual surgeons. The modern treatment modalities like the ESWL, PCNL, flexible scopy and lithotripsy with laser are minimally invasive but very expensive and are not available in the rural areas. Open surgeries for these stones in addition to being overkill are extremely difficult and there are instance [although] not reported when patients have died following surgeries for small stones [especially nephrolithotomy].

We describe how we managed these stones in rural areas through the surgical camps of Samiti for Education, Environment, Social and Health Action [SEESHA] and Surgical Services initiative [SSI].

METHODS USED
A. WATCH AND WAIT: These were followed for stones less than 5 mm in size. The only specific instruction to the patient is to take sufficient water to pass a minimum of 3.5 liters of urine every day.
B. MEDICAL EXPULSION THERAPY: These were used primarily for stones between 5 mm to 8 mm in size. Sometimes especially those not willing for surgical procedures had the therapy for stone up to 12 mm in size. None of them were successful in our experience for stones more than 12 mm and the chance reduced dramatically after 8 mm. The treatment consisted of alpha blocker like Tamsulosin, anti-inflammatory medicine like Serratiopeptidase along with antibiotics if required and hydration.
C. DOUBLE J STENTING: Most of the patients who had stones larger than 8 mm were offered DJ stenting. This increased the size of the lumen of the ureter two and a half to three times and facilitated passage of the stones.
D. URETERORENOSCOPY [URS] AND LITHOTRIPSY: URS was carried out about 4 to 6 weeks following DJ stenting. Lithoclast was used to break the stones. With prior stenting the stones often come to the renal pelvis or ureter and it is possible to visualize the stones in the upper calyces with the URS.
E. SPECIAL PROCEDURES: When it was not possible to visualize the stone the following procedures were tried
   a. FLUSHING: Flushing with the pathfinder keeping the URS just about the PUJ helped the stones to pop into view
   b. ULTRASOUND GUIDED FLUSHING: When the above procedure was not successful, portable ultrasound was used to locate the calculus and flushing was tried with the URS at the opening of the calyx
   c. ULTRASOUND GUIDED BASKETING: With the ultrasound guidance like before basket was used to dislodge the calculus
   d. INTRA-OPERATIVE DIURETICS: Rarely intra-operative diuretics helped
RESULTS
Table 1 shows the results of the procedures carried out during the last two years at the various surgical camps of SEESHA and SSI.

<table>
<thead>
<tr>
<th>NUMBER OF PATIENTS</th>
<th>INTERVENTION</th>
<th>RESULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>208 with stones less than 5 mm in size</td>
<td>Watch and wait</td>
<td>Follow up is not available for most of the patients</td>
</tr>
<tr>
<td>187 patients with stones 5 to 7 mm in size</td>
<td>Medical Expulsion therapy</td>
<td>128 passed the stones, 18 had DJ stenting subsequently and rest were lost to follow up</td>
</tr>
</tbody>
</table>
| 302 patients with > 7 mm stones | DJ stenting                  | • 120 passed the stone with DJ stenting  
• 145 needed Ureterorenoscopy and lithotripsy  
• 37 still continued to have the lower calyceal stones |

Table 2 shows the number and outcome of special procedures used

<table>
<thead>
<tr>
<th>PROCEDURE</th>
<th>NUMBER</th>
<th>OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLUSHING</td>
<td>48</td>
<td>26 successful removal</td>
</tr>
<tr>
<td>ULTRASOUND GUIDED FLUSHING</td>
<td>17</td>
<td>9 successful removal</td>
</tr>
<tr>
<td>ULTRASOUND GUIDED BASKETING</td>
<td>3</td>
<td>2 successful removal after lithotripsy</td>
</tr>
<tr>
<td>INTRA-OPERATIVE DIURETICS</td>
<td>18</td>
<td>12 successful removal with other modalities combined</td>
</tr>
</tbody>
</table>

DISCUSSION
Urinary calculi affect about 5-15% of the population in industrialized countries [2]. With ureteric stones of sizes up to 5mm, 71-98% generally pass within a few weeks [3]. The incidence of urinary calculi in industrialized countries ranges from 0.5 to 1.9%. However, in India, the incidence has a wider regional variation and could be as high as 7.6% [1].

In patients with renal stones, extracorporeal shockwave lithotripsy (ESWL), flexible ureterorenoscopy (URS), and percutaneous nephrolithotripsy (PCNL) are the available options for treatment. ESWL was a major development in the 1980s, with a minimally-invasive approach and few complications. An alternative is ureterorenoscopic stone removal (URS), which has been improved by miniaturization. Small flexible and semi-rigid equipment now has good optical quality, and the holmium/YAG lasers currently in use only penetrate 0.5mm, lowering the risks of damage and improving stone clearance. Lastly, percutaneous nephrolithotripsy (PCNL) is mostly used on large
stones above 20mm, staghorn calculi, and impacted stones over 15mm in the upper ureter [4].

However, the primary drawbacks of all these procedures in rural areas are their high costs and difficulty in setting up minimally invasive units. Here we described the low-cost methods of dealing with renal stones in rural areas that were carried out at the innovative surgical and diagnostic camps in North and Northeast India [5].

Of the various types of calculi the calyceal ones especially the lower and middle calyceal ones are the most problematic. Although ESWL or flexible ureteroscopy or PCNL are the standard options that are available, none of these is available to the rural patients or surgeons.

The techniques described above are useful in many of the rural patients. Figure 1 shows ultrasound guided basketing of a lower calyceal calculus.

Figure 1: Ultrasound guided basketing of lower calyceal calculus

SUMMARY
Renal calyceal stones are very expensive and difficult to manage especially in remote and rural areas. Ureterorenoscopic removal with prior DJ stenting, basketing or flushing with ultrasound guidance are reasonable low cost alternatives.

REFERENCES


Dear Editor,

Re: Evaluation of Biometric Cashless Smart Insurance Card for people living Below the Poverty Line. By Dr. Sitanath De. (vol. 9, No. 4 p 18)

This letter by Dr. De shows that government schemes to help the poor, like the Rashtreeya Swasthya Bima Yojana (RSBY) have failed. I for one, sincerely believe that these are excellent schemes for the cash starved poor.

All the examples that Dr. De has written are by doctors and institutions who have the greed for the mammon. They will stoop to any unscrupulous level to “earn” a few more rupees. Their presence is a shame for our nation. You will find them in private, public and even in corporate sectors, and in all walks of life too. Even politics is not free of such people! Remember the recent scams after scams!

The un-indicated investigations, surgeries, treatments are the creations of the greedy health care personnel and not the drawbacks of the scheme itself. Government has a lot of trust in the medical fraternity and we prove yet again how untrustworthy we (in private as well public sectors) are. We even have our own watchdog, the MCI to control unethical practices; look at what the apex body found out a few years ago. The president of MCI was sacked for corruption!
So let us not seek fault with schemes.

Vajpayee Arogyashree is also such a scheme which gives poor patients tertiary care, cashless, up to Rs.1,50,000! Can we say there is no misuse in this! Should we stop this scheme just because a few greedy institutions are making unethical practice to use this money! Certainly not. Where else can a cancer patient find solace if it were not for this scheme? Who will accept a poor man for cardiac surgery if he did not have Vajpayee Arogyashree.

The rot is in the Indians, and that is an inescapable fact.

The bright side of it all is that there are many a good Samaritans in India who do wonderful work and service. But the media which is also bad, is interested in gory news, rapes, murders, sensations and glitz. It does not want to motivate the public by showing good examples in our own nation. How many amongst us know of a man called Palam Kalyanasundaram, form Tamil Nad, a librarian for 30 years, who spent all his salary to help the poor and worked after office hours in a restaurant to meet his needs, gave away his pension fund of Rs.10 lakhs to the needy, who won the “Man of the Millenium” award of Rs.30 crores from US govt, and who spent all that money to help the poor? Even our own government has not honoured him. But we all know of Sachin who earned crores of rupees just playing, or the cine artistes or the saffron clothed Babas who have thousands of crores of rupees in banks.

I wish we start looking at the brighter sides of our lives and try to learn from better examples in our own Bharat.

Dr. R. D. Prabhu
Compiled by: Dr SK Basu, President ARSI (Gynae), Dr Pramod Jain, Professor, Orthopedics & Dr S. Rao, Assoc Prof, Surgery, MGIMS, Sevagram

SURGERY

JAMA Surgery, Volume 148, Number 8, Pg 703
Increased risk of Mucinous Neoplasm of the Appendix in Adults Undergoing Interval Appendectomy.
Mattew J. Furman et al.

This retrospective study from a single tertiary care institution is based on the fact that there is a controversy about the role of interval appendectomy after conservative management of perforated appendicitis. The objective was to determine whether adult patients undergoing interval appendectomy experience an increased rate of neoplasms. This study concluded that interval interval appendectomies should be considered in all adult patients especially those above 40 years to determine the underlying cause of appendicitis.

JAMA Surgery, Volume 148, Number 8, Pg 707
Ultrasonography-Guided bilateral rectus sheath block (BRSB) vs local anesthetic infiltration after pediatric umbilical hernia repair.
R. Scott Dingeman et al.

This is a prospective, observer-blinded, randomised clinical trial to compare the efficacy of USG-guided BRSB and local anaesthetic infiltration in providing post operative analgesia after pediatric umbilical hernia repair. The authors have found that BRSB is associated with lower median FACES score and decreased used of opioid and non opioid medication in children.

The American Journal of Surgery, volume 206, Number 5 Pg 669
Surgery for Graves’ disease (GD): a 25 year perspective.
Roy Phitayakorn et al.

This is a single institute retrospective review of 300 patients of GD operated over a period of 25 years based on the fact that optimal treatment of GD remains controversial. This is the largest single institution series reported in the USA over the past 20 years. All patients had undergone either total, near total or subtotal thyroidectomies with routine identification of recurrent laryngeal nerve during every surgery. The authors suggest that surgical treatment of using total thyroidectomy at a high volume center should be considered a very safe treatment for GD.

The American Journal of Surgery, volume 206, Number 5 Pg 704
Review of risk factors for the development of contra lateral breast cancer.
Ingrid M. Lizarrange et al.

Women who are treated for breast cancer have an increased chance of developing contra lateral breast cancer. This risk is however overestimated by women in western countries, who ultimately opt for contra lateral prophylactic mastectomy. The authors did a MEDLINE literature search for publications with key word “contra lateral breast cancer” and relevant literature was identified. The authors are of opinion that the global incidence of contra lateral breast cancer is decreasing which is attributable to more efficient adjuvant therapies. Apart from patients with BRCA mutation, patients
with strong family history, who are diagnosed before 35 years of age either ER negative index appear to have a higher incidence of contralateral breast cancer.

OBST. & GYNAECOLOGY

Cesarean Scar Defects: an under-recognized Cause of Abnormal Uterine Bleeding and Other Gynecologic Complications
Amanda M. Tower, MD, Gary N. Frishman, MD

The gynecologic sequelae due to deficient uterine scar healing after cesarean section are only recently being identified and described. These include conditions such as abnormal bleeding, pelvic pain, infertility, and cesarean scar ectopic pregnancy, as well as a potentially higher risk of complications and difficulties during gynecologic procedures such as uterine evacuation, hysterectomy, endometrial ablation, and insertion of an intrauterine device. The proposed mechanism of abnormal uterine bleeding is a pouch or “isthmocoele” in the lower uterine segment that causes delayed menstrual bleeding. The prevalence of symptomatic or clinically relevant cesarean scar defects (CSDs) ranges from 19.4% to 88%. Possible risk factors for CSD include number of cesarean sections, uterine position, labor before cesarean section, and surgical technique used to close the uterine incision. There are no accepted guidelines for the diagnostic criteria of CSD. We propose that a CSD be defined on transvaginal ultrasound or saline infusion Sonohysterography as a triangular hypoechoic defect in the myometrium at the site of the previous hysterotomy. We also propose a classification system to aid in standardized classification for future research. Surgical techniques for repair of CSD include laparoscopic excision, resectoscopic treatment, vaginal revision, and endometrial ablation.

Cesarean scar defect (arrow) on sonohystogram.

New Urine Test Allows for Detection of Chlamydia at Point of Care
By Sarah Bruyn Jones | December 20, 2013

A newly developed diagnostic test can detect Chlamydia trachomatis in less than 20 minutes, making it easy to perform at point of care (POC) during a patient visit, researchers report in The Journal of Molecular Diagnostics. The test uses recombinase polymerase amplification (RPA), a nucleic acid amplification technique,
to detect C trachomatis in urine samples. The researchers report that this new method is significantly less laborious, less time-consuming, and less expensive than current methods. They cite the relative simplicity of the test as a reason for integrating it into numerous POC settings. The test does not require the purification of total DNA from the urine sample and, therefore, eliminates the need for the specialized equipment that is required in the existing, and widely used, polymerase chain reaction–based techniques for testing C trachomatis.

"The assay enables highly specific C trachomatis detection with sensitivity levels significantly improved compared to currently available C trachomatis POC assays," said Ulo Langel, PhD, Professor of Molecular Biotechnology, University of Tartu, Estonia, and Professor of Neurochemistry, Stockholm University, Sweden, and one of the authors. In offering evidence of the new assay's potential reliability, the researchers said initial analysis of a small patient population showed the new assay's performance indicated a specificity of 100% and a sensitivity of 83%.

"The alarmingly poor performance of the available POC tests for C trachomatis has limited their wider use, and there is a clear requirement for more sensitive and cost-effective diagnostic platforms. Hence, the need for an applicable on-site test that offers reasonably sensitive detection," said Langel.

The assay was tested on urine samples from 70 patients (51 females and 19 males) attending a sexual health clinic in Estonia. The samples were tested in parallel using RPA and Roche Cobas Amplicor C trachomatis assays.

Fifty-eight samples tested negative in both assays. No false negatives were detected.

Of the 12 samples that tested positive using the Roche assay, 10 tested positive in the RPA reaction. In addition, of the 12 patients who tested positive, 9 were asymptomatic.

ORTHOPAEDICS

Role of extracorporeal irradiation in malignant bone tumors

Extracorporeal irradiation (ECI) is relatively a rare method used in the management of malignant bone tumors (MBT). It consists of en-bloc removal of the tumor bearing bone segment, removal of the tumor from the bone, irradiation, and re-implantation back in the body. From year 2009 to 2010, 14 patients with primary MBT were enrolled into this study. The eligibility criteria included histopathological proof of malignancy, no evidence of distant metastases, and suitability for limb preservation therapy. Surgery was performed about 4 weeks after completion of neoadjuvant chemotherapy. The affected bone segment was resected, irradiated extracorporeally with a dose of 50 Gy and reimplanted. Functional outcome was assessed by Musculoskeletal Tumor Society (MSTS) scoring system. There were 10 males and four females with median age of 14 years. Histopathologically, nine patients had osteosarcoma (OS) and five had Ewing's sarcoma family of tumors (ESFT). Distribution of primary site was as follows: Femur eight patients, tibia five patients and humerus one patient. At a median follow-up was 22 months, three patients (two OS, one ESFT)
had local recurrence. Two patients (14%) developed wound infection in the perioperative period. The 2 year local recurrence free survival was 73% and mean MSTS score was 88.

Results of our study suggest that ECI is technically feasible in the management of MBT and provides decent local control and short-term survival rates.


Authors examined osteochondral autografts, obtained at a mean of 19.5 months (3 to 48) following extracorporeal irradiation and re-implantation to replace bone defects after removal of tumours. The specimens were obtained from six patients (mean age 13.3 years (10 to 18)) and consisted of articular cartilage (five), subchondral bone (five), external callus (one) and tendon (one). The tumour cells in the grafts were eradicated by a single radiation dose of 60 Gy. In three cartilage specimens, viable chondrocytes were detected. The survival of chondrocytes was confirmed with S-100 protein staining. Three specimens from the subchondral region and a tendon displayed features of regeneration. Callus was seen at the junction between host and irradiated bone.

The use of calcium and vitamin D in the management of osteoporosis


Osteoporosis poses a significant public health issue, causing significant morbidity and mortality. Calcium and vitamin D utilization in the optimization of bone health is often overlooked by patients and health care providers. In addition, the optimal standard of care for osteoporosis should encompass adequate calcium and vitamin D intake. Compliance to calcium and vitamin D therapy is paramount for effective prevention of osteoporotic fractures. A recently released algorithm (FRAX) estimating absolute fracture risk allows the health care provider to decide when pharmacologic therapy is warranted in addition to calcium and vitamin D. When pharmacologic therapy is advised, continued use of calcium and vitamin D is recommended for optimal fracture risk reduction. A bricks and mortar analogy is often helpful when counseling patients and this analogy will be explained. This manuscript reviews relevant data related to calcium and vitamin D use for patients at risk for fracture due to bone loss. As reviewed, there is ample evidence that calcium and vitamin D alone have the ability to prevent bone loss and reduce fracture. The one caveat is that compliance must be emphasized. Clearly, with diminished compliance the protective effects of calcium and vitamin D are lost. Continued discussions with patients to promote awareness of bone health and enhance compliance with calcium and vitamin D supplements, as well as prescription drugs, should be completed. Utilizing the entire health care team can be beneficial in this quest. Office staff should understand and remind patients about bone health at key times, such as during scheduling of bone density testing. The health care provider should highlight proper nutrition and supplementation at pertinent times. For example, annual examinations are excellent times to review calcium and vitamin D intake with recommendations for supplementation reviewed. The pharmacist has a vital role in making patients aware of the need for calcium and vitamin D with prescription osteoporosis therapies, including proper administration to ensure absorption of bisphosphonate medications.
Dr. (Mrs.) Shipra Banerjee

Association of Rural Surgeons of India (ARSI) deeply mourns the sudden demise of Dr. (Mrs.) Shipra Banerjee, who left for her heavenly abode on 27th April 2014 at her residence in Dehradun. Words will be inadequate to express our feeling for the departed soul.

It is not easy to drop a person out of one’s mind especially when that person leaves an indelible mark on the hearts of many. Dr. Mrs. Shipra Banerjee, MD (Community medicine), DA, MPH (Holland), FARS was one such truly noble personality. To say that she was a larger than life figure would be an understatement. She was not only instrumental in building and nurturing Rural Medicare Society in New Delhi (a centre to provide primary and secondary level of health care to the rural and peri-urban community of Delhi and its adjoining states) to its present state, she also remained one of the most active members of ARSI from its inception, till her very last breath.

All through her professional career she worked hand in hand with her husband Dr. J.K Banerjee for the growth of Rural Medicare Society and ARSI. Her undying passion and commitment to these institutions genuinely helped them achieve their true potential today. No wonder she never missed any conference of ARSI held till date and played an active role in various capacities as speaker, chair person and author of many articles in ARSI bulletin. She will always be remembered as a great proponent of Rural Surgery.

The death of a loved one is a curious thing. We all know that our time in this world is limited, and that eventually all of us will end up underneath some sheet, never to wake up. And yet it is always a surprise when it happens to someone we know. Our heart goes out to Dr. Banerjee and we express our deepest sympathy to him and his only daughter Mitali as they are trying to readjust their lives to overcome this moment of dark surprise. It is said “Death ends a life, not a relationship.” Members of ARSI pray to Almighty that may their hearts soon be filled with wonderful memories of joyful times spent together as they celebrate a life well lived.

Dr.S.K.Basu
President, ARSI

Rural Surgery  Vol. 10  No. 2  21  Sept. - Dec. - 2014
ARSICON - 2014
22nd Annual Conference of Association of Rural Surgeons of India
Date: 28th-30th November 2014

THEME - INNOVATION, SAFE AND AFFORDABLE SURGERY AT DOORSTEP

Organized by Department of Surgery,
Midnapore Medical College & Hospital
Paschim Medinipur, West Bengal PIN 721101

Website: www.arsicon2014.org

Email Organizers- sukumarmaiti@hotmail.com, amitranjushree@gmail.com sanmukh@cal2.vsnl.net.in

Phone No 09434119017(Dr S Maiti)
09830403360(Dr Amit Roy),
09830703801(Mr Indranil Ghosh)
03221255290(Dr S N De)
09831031015(Dr Sanjib K Mukhopadhyay)

Venue: Auditorium, MMCH & Vidyasagar Hall
Please check this link - http://kolkatapages.info/Arsicon/dev/ Chairman Reception
ADVERTISEMENT REQUEST IN RURAL SURGERY

The Association of Rural Surgeons of India (ARSI) is providing optimum surgical care within limited resources to impoverished communities in India who live not only in villages but also in urban slums. This effort is to bridge the widening gap between need for surgical and medical care and available resources. With a membership of more than 500 rural surgeons from various surgical disciplines, practicing all over India, ARSI comes out with a quarterly news bulletin in the name “Rural Surgery”. This bulletin contains interesting articles on clinical cases, social issues, information about innovation pertaining to rural surgery and many others. ARSI is also closely associated with International Federation of Rural Surgeons whose members are spread all over the world. This bulletin is distributed to all the members both in India and abroad. We appeal to you to advertise in this bulletin as this not only gives you access to our members but also an opportunity to support a good cause.

Advertisement Rates:

<table>
<thead>
<tr>
<th></th>
<th>For Single Insertion</th>
<th>For all four issues</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Only in one issue)</td>
<td>(One Year)</td>
</tr>
<tr>
<td>Inside Front Page</td>
<td>INR 5000/-</td>
<td>INR 15,000</td>
</tr>
<tr>
<td>Inside Back Page</td>
<td>INR 5000/-</td>
<td>INR 15,000</td>
</tr>
<tr>
<td>Inside Full Page</td>
<td>INR 3000/-</td>
<td>INR 10,000/-</td>
</tr>
<tr>
<td>Inside Half Page</td>
<td>INR 2000/-</td>
<td>INR 7000/-</td>
</tr>
</tbody>
</table>

Payments

The Payment can be made through NEFT / RTGS or by cheque.

Details for NEFT /RTGS Transfers -
Account name - Association of Rural Surgeons of India
Account No - 11323035298
Bank name - State Bank of India
Address of bank - Shahada
IFSC code for transfer - SBIN 0000480

Address at which cheque is to be sent -
Dr. Rajesh Tongaonkar
Secretary ARSI,
Dr. Tongaonkar Hospital,
Dondaicha, Dist. Dhule (Maharashtra)
Pin. 425408
Instructions for Authors

Reviewing and Publication
All submissions will be subject to an immediate screening process by the Editor. Papers not within the scope, or that obviously do not meet the scientific standards of the journal, may be declined by the Editor without further review. Those that meet the criteria for consideration will usually be sent to two reviewers. All articles are edited to ensure conciseness and clarity. The Editorial board reserves the right to make literary corrections. The Editor will make every effort to reach decisions within 8-10 weeks of submission. Accepted articles will be prepared for publication in any of the forthcoming issues.

Submission
Articles in the following categories are published:

Original Articles: Original clinical studies relevant to the care of medical patients may be submitted for publication. [Maximum 3000 words and not more than 20 references]

Review articles: May discuss diseases commonly treated, or address diagnosis and/or management strategies during patient care, or discuss monitoring, equipment, drug therapies in patient care. [Maximum 3000 words and not more than 20 references] Editorial and Review articles are usually by invitation.

Case Reports: Consisting of brief, illustrative reports of patients' history and medical management, with a clear message for all readers in the form of a potentially useful treatment deserving scientific evaluation, or a potentially avoidable hazard, may be submitted for publication. The discussion should highlight any previous similar reports, the importance of the issues identified and recommendations by the authors. [Maximum 2000 words and not more than 6 references]

Letter to editor: Well described series of patients or single patient, particularly discussing problems seen less commonly elsewhere, or when there has been innovation in the management of the condition described, may be submitted. [Limit 1000 words and not more than 4 references]

Manuscript Preparation
Authors should submit articles written in English. Authors are requested to use a clear and simple writing style. All text must be double spaced throughout. Abbreviations should be defined the first time they are used and a list of all abbreviations used should be provided.

Format
Manuscripts should be divided into: Title page, Keywords, Abstract, Introduction, Materials and methods, Results, Discussion, Acknowledgements, References, Figure legends, Tables.

Title page: It should have title of the manuscript in capital letters and should list author affiliation, full addresses (including telephone numbers, fax and email) for all authors and indicate the author responsible for correspondence.

Keywords: Up to five keywords should be given in alphabetical order.

Abstract: Should not exceed 250 words and must be structured into separate sections headed - Background and Aims, Subjects and Methods, Results, Conclusions.

Introduction: Must clearly state the background to the research and its aims and should end with a very brief statement of what has been achieved.

Materials and methods: Should be subdivided and must contain sufficient experimental information to allow the experiments to be reproduced.

Results and discussion: Should be kept separate. Authors must state the main conclusions of the research, giving a clear explanation of their importance and relevance.
Acknowledgements: Should be kept to a minimum.

References: Must be prepared in the Vancouver style including the abbreviations of journal titles and first and last page numbers. References must be numbered consecutively, superscripted without brackets in the order in which they are cited in the text, followed by any in tables or figure legends. Each reference must have an individual reference number. Please avoid excessive referencing. All authors should be listed unless there are more than six in which case list the first six followed by et al. Please take care to follow the reference style precisely; references not in the correct style may be retyped, necessitating tedious proofreading.

Journal article, personal author(s):

Journal article, organization as author:

Book, personal author(s):

Book, organization as author and publisher:

Book, editor(s):

Chapter in a book:

Dictionary entry:

Newspaper article:

Legal material:

CD-ROM:

Journal article on the Internet:

Book on the Internet:

Encyclopedia on the Internet

Internet homepage/website:
Part of an Internet website:

Figure legends: Legends for each figure should not exceed about 50 words.

Tables: Should be titled and should not include vertical rules. Footnotes to tables should be concise.

Illustrations and figures:
Authors are encouraged to submit figures and illustrations in electronic format preferably JPEG or gif files in addition to hard copies. Figure files can be submitted by email or alternatively files may be submitted on a computer disc or floppy.

Submission of articles
1. Please submit all manuscript electronically to the journal
   E-mail:- ruralsurgery@gmail.com

2. Please type a covering letter in the E-mail text, and the submitted article as an attachment.

5. If the article contains any figures, Please enclose them in ‘jpeg’ or ‘gif’ format as an attachment to the E-mail. Editor may ask for hard copy of the figure / photograph if required. Please include figure legend in the body of the manuscript file.

6. Undertaking:
All the authors must give an undertaking that-
A. The manuscript submitted for publication is their original work

B. The work / material is not copied from anywhere

C. This work has not been published in any other journal.

EDITORIAL-ADDRESS:
The Editor
RURAL SURGERY
DEPARTMENT OF SURGERY
MGIMS. SEVAGRAM
WARDHA-442102
M.S. INDIA
Email: drdilipgupta@hotmail.com