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Calcium and Vitamin D Intake in Women

In this Issue

For suggestions, comments or contribution please email us at
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Most women are unaware of the protective benefits of an adequate diet against postmenopausal calcium loss. This article is directed towards improving the reader's knowledge about the role of dietary factors in improving bone strength.

Adequate calcium intake has been shown to reduce bone loss and to prevent fractures in women nearing menopause (peri-menopausal) and post-menopausal women. Some women may be at greater risk than others because of smoking, alcohol consumption, sedentary lifestyle, usage of certain medication (heparin, steroids), having had a fracture previously and menopause etc.

Calcium requirement rises at menopause, or whenever estrogen is lost because calcium absorption efficiency and renal conservation are both estrogen dependent. For most postmenopausal women, the target calcium intake is 1200 mg/day. Calcium strongly enhances the bone-protective effects of hormonal therapy in postmenopausal women, and sufficient calcium intake is an essential part of any treatment regimen for patients with established osteoporosis.

Benefits of Calcium and Vitamin D:

Women having been prescribed medication e.g. hormones, bisphosphonates, calcitonin, etc need an adequate amount of calcium for maximum benefit.

Calcium has also been associated with beneficial effects in several non-skeletal disorders, primarily hypertension, colorectal cancer, obesity, and nephrolithiasis. Although the extent of those effects has not been fully elucidated. In the presence of adequate vitamin D status, adequate calcium intake has been shown to reduce bone loss in peri-menopausal and postmenopausal women and to reduce fractures in postmenopausal women older than 60 years with low calcium intakes.

Requirements:

The recommended calcium requirement is 1000 mg daily for pre-menopausal women aged 25 to 50 years, and varies from 1200 to 1500 mg daily for postmenopausal women. Recommended vitamin D intake to achieve a serum 25(OH)D of 30 ng/ml or more is usually achieved with a daily intake of at least 400 IU (for women aged 51 - 70 years) to 600 IU (for women > 70 years). In the absence of sunlight, daily intakes of 800 to 1000 IU are recommended since wearing sunscreen with a sun protection factor of 8 or above has been shown to reduce vitamin D production by 95%.

Sources:
Undoubtedly the best source of calcium is dairy products. Approximately 3 cups of dairy products daily provide the 1200-mg calcium target. Women at increased risk for inadequate dietary calcium intake include those who are lactose intolerant, follow a pure vegetarian diet (vegan), or have poor eating habits.
Sources of vitamin D include sunlight exposure, vitamin D fortified foods (e.g., milk, some yogurts, orange juices, some breads, oily fish, such as salmon or mackerel), and vitamin supplements.

Adverse effects:
Calcium doses higher than 2150 mg daily have been shown to increase renal calculi by 17%, and women with a history of renal calculi should not exceed the age-appropriate dosage and should increase intake of water with calcium.
The safe upper limit of vitamin D daily is 2000 IU. Higher doses may cause vitamin D intoxication and increased risk for hypercalciuria and hypercalcemia. Doses higher than 10,000 IU daily should be avoided.

ADR Reducing Tip

1. Fast infusion of IV Ciprofloxacin can induce rashes, injection site pain, erythema, and even thrombophlebitis.
2. The extent and frequency of this ADR can be lessened if infused through anticubital vein rather than through small, more peripheral veins
3. IV Ciprofloxacin should not be infused over less than 60 minutes

Remember!
ADR reporting is crucial for patient safety

Key message:
- Inadequate calcium intake in women is associated with bone loss.
- Women at higher risk for poor intake include peri-menopausal and postmenopausal women, vegans, and those who are lactose intolerant, and those who have poor eating habits.
- There are no reported cases of calcium intoxication from food sources, and cases associated with supplements are rare.
- Laboratory tests for serum vitamin D include 25(OH)D, which can help identify women who are vitamin D deficient and therefore likely to be calcium deficient even when consuming adequate amounts of calcium from diet and supplements.
- Approximately 3 cups of dairy products daily provide the 1200-mg target. If calcium supplementation is needed, each dose must not exceed the age-appropriate allowance and should be consumed with a large glass of water.

Conclusion:
Postmenopausal health has taken a back seat to most heath care issues in Pakistan. This is compounded by ambivalence, both on the administrative and personal level, and most women in our society women tend to ignore symptoms and signs until too late. Simple awareness of issues may lead to alleviation of a number of health problems.

Contributed by: Dr Rozilla Sadia Khan, Senior Instructor, Department of Obstetrics/Gynaecology—AKUH

FDA Safety Alert, February 2007—Rosiglitazone (Avandia)

Glaxo SmithKline (GSK) notified health care professionals of the results of a randomised, double-blind parallel group study [ADOPT] of 4,360 patients with recently diagnosed type 2 diabetes mellitus followed for 4-6 years to compare glycemic control with rosiglitazone relative to metformin and glyburide monotherapies. Significantly more female patients who received rosiglitazone experienced fractures of the upper arm, hand, or foot, than did female patients who received either metformin or glyburide. At GSK's request, an independent safety committee reviewed an interim analysis of fractures in another large; ongoing; controlled clinical trial and preliminary analysis was reported as being consistent with the observations from ADOPT. Health care professionals should consider the risk of fracture when initiating or treating female patients with type 2 diabetes mellitus with rosiglitazone.

Management of Intractable Hiccups

Intractable hiccups, defined as hiccups lasting more than a month, are a rare condition that occur primarily in male individuals with a history of one or more organic diseases or psychological disorders. A hiccup is a repeated involuntary spasmodic contraction of the diaphragm followed by a sudden closure of the glottis which checks the inflow of air and produces the characteristic sounds. Hiccups result when afferent or efferent nerves to the muscles of respiration, or the medullary centers controlling these muscles are irritated.

Causes:

- The underlying pathophysiology of intractable hiccups remains to be elucidated, but is believed to involve organic, drug-induced, and/or psychological causes.
- Drugs reported to cause intractable hiccups have included antibiotics, antipsychotics and perphenazine, corticosteroids, etoposide, and megestrol acetate.
- Other non-drug related proposed causes include light anesthesia when muscle relaxation is produced by neuromuscular blocking agents, gastric distension, and diaphragmatic irritation. If left untreated, intractable hiccups may result in severe discomfort, decreased physical strength, mental depression, and possibly death.

QUIZ

Do you know besides Multiple Myeloma, what else is a FDA approved indication for Thalidomide ?

See answer on pager # 4

Treatment:

Removal of Offending Agents:

Patients suffering from intractable hiccups believed to be drug- induced should be given a drug holiday, if practical; chemically- induced hiccups often spontaneously resolve upon drug discontinuation

Non-Pharmacological Treatment:

A plethora of non-pharmacological treatments for hiccups exist, including: holding your breath; slowly drinking a glass of water; pressure on eyeballs; swallowing; irritation of nasal mucosa to produce sneezing; mustard plaster, ice bag, ethyl chloride spray, or ether applied to the epigastrium; pressure over carotid sinus between thumb and forefinger for one minute, grasping the artery at the midpoint of the anterior border of the sternocleidomastoid; strong digital pressure over the phrenic nerves in their course behind the sternoclavicular points; forceable traction of the tongue; induction of nausea or vomiting by tickling the throat; gasping with sudden fright, the Valsalva maneuver, hyperventilation, and drinking water from the 'wrong side' of a glass.

Pharmacological Treatment:

When non-pharmacological treatments failed, various drug therapies have been proposed. The only drug approved by the FDA for the treatment of intractable hiccups is chlorpromazine. Several case reports and reviews of cases have described good to excellent results as follows:

Metoclopramide 5 to 10 mg given IM or IV	Chlorpromazine 25 to 50 mg IV with a repeat dose 2 to 4 hours later IM or IV	Amitriptyline up to 30 mg/day in divided doses
Haloperidol 2 mg IM	Baclofen 10 mg orally 3 times daily	Nifedipine 10 to 20 mg orally 3 times daily
Oral Valproic acid titrated to plasma levels ranging from 34 to 96 mcg/ml	Atropine sulfate 0.4 mg 3 to 4 times per day followed by heavy sedation with pentobarbital 200 to 400 mg	

Contributed by: Syed Yasir Ali, Pharmacist, Department of Pharmacy Services—AKUH

Facts About Therapeutic Drug Monitoring

Therapeutic Drug Monitoring (TDM) is defined as the use of drug concentrations to optimise drug therapy for individual patient. The idea that intensity and duration of pharmacological response is dependent on serum concentration was first reported by Marshalland, then tested for the screening of antimalarials during World War II. Since 1960s extensive research was directed in developing specific and sensitive analytical methods for serum drug concentration measurements.

Currently, drug concentration assays most widely available in hospital laboratory are for: antiepileptics (Carbamazepine, Ethosuximide, Phenobarbital, Phenytoin and Valproic acid), cardiac drugs (Digoxin, Procainamide and Quinidine), antibiotics (Aminoglycosides and Vancomycin), Theophylline, Cyclosporine and Lithium.
As a general rule, the serum drug concentrations are affected by following factors:

- Patient's renal or hepatic function
- Protein binding capacity (Albumin level)
- Electrolytes (particularly K^{+} and Mg^{+2})
- Sample timing with respect to dose (loading as well as maintenance) and route
- Drug-Drug Interaction
- Drug-Food interaction

Drug Interaction Update

CELECOXIB -- WARFARIN

Adverse Effect: Concurrent use of Celecoxib and Warfarin may result in an increased risk of bleeding.
Clinical Management

Use caution when these agents are coadministered and monitor prothrombin time during concomitant treatment, especially in the first few days after initiating or changing celecoxib therapy. This combination does not appear to be potentially harmful in long term concomitant therapy.

Onset: delayed
Severity: major
Documentation: good
Probable Mechanism: competition for metabolism through cytochrome P450 2C9 enzymes

Answer **Treatment and prophylaxis of Erythema nodosum leprosum is another FDA approved indication for Thalidomide**

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