

Measuring Cardiac Efficiency
+
Improving Cardiac Health
&
Increasing LVEF
(Left Ventricular Ejection Fraction)

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Your Quest For Longevity Begins Here !

Cardiac Efficiency

The Art of Measuring Blood Pressure / Cardiac Efficiency and the Meaning Behind These Numbers

The patient is seated in a chair and made to relax for ten whole minutes, before the cuff of a manually pumping digital blood pressure measuring machine is placed on the upper left arm. After manually pumping, the blood pressure (BP) is measured along with the heart rate/pulse (P).

Thereafter, the patient is asked to stand up and this measurement is once again immediately repeated. The standing blood pressure (BPs) and the heart rate/pulse (Ps) is also noted.

Normal Blood Pressure & Heart Rate

BP for Vegetarians and Asians With Predominantly Vegetarian Diet

- BP = 110 / 70 mm Hg
- Heart Rate / Pulse P = 70 beats per minute
- BP and Heart Rate on Exercising must increase **↑** to reflect **Good Cardiac Efficiency.**
- If instead it goes down **↓** then it means or is a foreboding of a **Serious Heart Disease.**
- BPs = 120 / 80 to 125 / 85 mm Hg
- Heart Rate / Pulse Ps = 85 beats per minute

BP for Caucasians (Predominantly Meat Eaters)

- BP = 120 / 80 mm Hg
- Heart Rate / Pulse P = 70 beats per minute
- BP and Heart Rate on Exercising must increase **↑** to reflect **Good Cardiac Efficiency.**
- If instead it goes down **↓** then it means or is a foreboding of a **Serious Heart Disease.**
- BPs = 130 / 90 to 135 / 90 mm Hg
- Heart Rate / Pulse Ps = 85 beats per minute

The Art of Measuring Blood Pressure

- The patient is seated in a chair and made to relax for **10 whole minutes**, before the cuff of a manually pumping digital blood pressure measuring machine is placed on the upper left arm. After manually pumping, the Blood Pressure (**BP**) is measured along with the Heart Rate (**P**).
- Thereafter, the patient is asked to stand up and this measurement is once again immediately repeated. The standing Blood Pressure (**BPs**) and the Heart Rate (**Ps**) is also noted.

The interpretation of these numbers (pertaining to *cardiac efficiency*) is as follows:

1. In a normally healthy young person, with good cardiac efficiency; the systolic, the diastolic, and the heart rate should increase by 10 to 15 points upon standing up.
2. A poor or small increase in any or all of these numbers is indicative of poor cardiac efficiency.
3. A fall in any of these numbers is indicative of a serious cardiac inefficiency or inefficiencies and a foreboding of an eminent cardiac event.
4. Tachycardia is indicative of a serious overall nutritional deficiency pointing principally to an *intracellular magnesium deficiency*.
5. Bradycardia is indicative of a very serious overall nutritional deficiency pointing principally to an *intracellular magnesium deficiency*.

The Interpretation of These Numbers

- The interpretation of these numbers (pertaining to **Cardiac Efficiency**) is as follows:
- In a normally health young person, with good cardiac efficiency, the systolic, diastolic and heart rate should **increase by 10 to 15 points** upon standing up.
- Poor or small increase in any or all of these numbers is indicative of poor cardiac efficiency.
- A fall in any of these numbers is indicative of a serious cardiac inefficiency and is foreboding of an eminent cardiac event.
- Tachycardia or Bradycardia is indicative of a serious overall nutritional deficiency pointing principally to an intracellular magnesium deficiency.

“Cardiac Efficiency”

- BP = 110 / 70 mm Hg (Systolic / Diastolic)
- P = 70 beats per minute (after 10 mins. rest)
- BP_s = 120 to 125 / 80 to 85 mm Hg (after immediately standing up)
- P_s = Standing Heart Rate = 80 to 85 beats per minute (must increase ↑ on exercise)
- No increase in BP or Heart Rate indicates **Poor Cardiac Efficiency**
- Falling ↓ BP or Pulse is indicative of an **Serious Cardiac Inefficiency** and is a foreboding of an **Eminent Cardiac Event**.

From a prevention point of view, It is more important to routinely check for “cardiac efficiency” and correct it in the initial stage, rather than wait for the next stage when blood pressure rises and/or tachycardia / bradycardia manifests itself.

In case of exceedingly low heart rate, below 60 bpm, please check for missed heart beats. This is a serious cardiac problem which requires immediate attention and correction.

For the complete paper on:
Reversal of Hypertension
&
Increasing Cardiac Efficiency
please download from:

<http://www.space-age.com/HighBloodPressure.pdf>

This tutorial contains a full refresher course with numerous case studies and special emphasis on intracellular magnesium and vitamin D which play a very important role in cardiac health.

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Improving Cardiac Efficiency

Replenishing intracellular magnesium and bringing the Intracellular levels to Optimum Values is the trick to improving “Cardiac Efficiency” and normalizing blood pressure and heart rate.

Serum Magnesium

Internationally accepted Standard Reference Range:

1.8 to 3.0 mg/dL (0.7 mmol/L to 1.2 mmol/L)

Optimum Desirable Value:

2.4 to 2.8 mg/dL (1.0 mmol/L to 1.2 mmol/L)

(as per International Standards of Preventive and Anti-Aging Medicine)

Intracellular Magnesium

(also know as RBC Magnesium / Erythrocyte Magnesium)

Standard Reference Range

**4.2 mg/dL to 6.8 mg/dL
(1.75 mmol/L to 2.8 mmol/L)**

Optimum Value

**5.5 mg/dL to 6.0 mg/dL
(2.3 mmol/L to 2.5 mmol/L)**

Magnesium – Dietary Supplement

RDA = Recommended Daily Allowance = Elemental Magnesium 350 mg/day

ODA = Optimum Daily Allowance = Elemental Magnesium 700 mg/day

Therapeutic dose of Intracellular Organic Magnesium = 1400 mg/day in 4 equally divided doses.

350 mg Elemental Magnesium with other supporting Nutrients when orally delivered at Intracellular levels, q4h, for minimum of six months will help to raise serum Magnesium to 2.4 mg/dL.

Around this time please do a serum magnesium test after discontinuing all magnesium supplementation for a minimum period of 7 days.

Continue Intracellular Magnesium supplements with other supporting nutrients thereafter till serum magnesium reaches Optimum serum level of 2.4 mg/dL (1.0 mmol/L) given above.

If serum uric acid or creatinine levels are above Optimum and closer to the upper end of the Standard Reference Range, please **discount** all serum mineral levels including magnesium by 10% to 20% to arrive at the **true (retained)** serum levels.

Renal Profile	Optimum Level	Std. Reference Range
Blood Urea Nitrogen	12.0 mg/dL	7.0 to 18.0 mg/dL
Serum Creatinine	0.8 mg/dL	0.5 to 1.5 mg/dL
Serum Uric Acid	4.0 mg/dL	3.6 to 7.8 mg/dL

If Blood Urea Nitrogen (BUN) is at the lower end of the Standard Reference Range or below normal, it means that there is a serious “Nitrogen Imbalance” in the body caused by very low dietary protein intake. In that case readings in the Renal Profile will be inconclusive and should not be relied upon.

If there is no protein / nitrogen deficiency in the body, and the serum creatinine and serum uric acid are much higher than the Optimum Levels, it would be advisable to first detoxify the kidneys to lower these numbers and bring the kidneys to perfect functioning.

If in doubt about a possible kidney malfunction (Renal Insufficiency), please do the serum Cystatin - C Test.

The Cystatin - C test helps identify kidney dysfunction at earlier stages, before symptoms appear and Creatinine levels rise. Again, this is a serum protein and will be inconclusive in case of a serious protein / nitrogen deficiency in the body.

A kidney malfunction (Renal Insufficiency) invariably causes Renal Induced Hypertension. This does not respond to hypertension lowering drugs like Amlodipine or Atenolol. The solution to lowering such Renal Induced Hypertension is to first Detox / repair the Kidneys and bring the Renal Profile to Optimum levels given above.

For the complete paper with numerous case studies please download from:

<http://www.space-age.com/HighBloodPressure.pdf>

CYSTATIN C

Cystatin C (cysteine protease inhibitor) is a serum protein that is filtered out of the blood by the kidneys and that serves as a measure of kidney function. An increased serum Cystatin C corresponds to a decreased GFR (glomerular filtration rate) and hence to kidney dysfunction.

The Cystatin C test helps identify kidney dysfunction at earlier stages, before symptoms appear and creatinine levels rise.

It also helps predict impending cardiovascular problems such as heart attack, stroke etc, in the elderly, as increased serum Cystatin C levels correspond to increased Homocysteine levels which is an independent risk factor for the premature development of coronary artery disease and thrombosis. Homocysteine is used in screening individuals who may be at risk for heart disease and stroke.

Another advantage is that, unlike creatinine, blood levels of Cystatin C are less influenced by age, gender, race, or muscle mass, which makes this a better indicator of kidney function. Hence, Cystatin C test is a more accurate to the standard creatinine test to screen for and monitor kidney dysfunction in those with suspected or known kidney diseases.

Cystatin C has nothing to do with the statin drugs that are used to lower cholesterol. Cystatin C levels may be affected by some drugs: corticosteroids can increase levels while cyclosporine can decrease them.

Measurements can be made and interpreted from a single random blood sample.

Standard Reference Range:
Male & Female: 0.53 to 0.95mg/L

Optimum Desirable Value:
Male & Female: ≤ 0.7 mg/L

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Additional Notes on Cardiac Efficiency & the Art of Measuring Blood Pressure

Using a digital blood pressure machine, the procedure outlined above helps to detect the following:

High Blood Pressure
Low Blood Pressure
Tachycardia
Bradycardia
Left Ventricle Hypertrophy
Systolic Dysfunction
Diastolic Dysfunction
Left Ventricle Ejection Fraction (LVEF)
Cardiac Efficiency

As a matter of fact, this procedure is a low cost approach for a family physician to quickly monitor the weekly progress of the patient once the Cardiologist who uses 2 D Echo Color Doppler Studies has identified these problems. All this can be done with a low cost manual pumping digital blood pressure machine. The skill is how accurately the measurements are carried out in your clinic. More importantly it allows the physician (or the patient) to monitor on a weekly basis the progress of the patient to the intracellular nutritional treatment given. 2 D Echo Color Doppler Studies can be repeated at the end of 3 and / or 6 months based on the progress achieved during these weekly measurements.

Most importantly, it allows the computation of Cardiac Efficiency which is very important in preventive medicine, as it shows up years before high blood pressure, tachycardia or bradycardia problems surface and hypertensive drugs are required.

Invariably, all the above problems do point primarily to a serious intracellular magnesium deficiency, which can be corrected with special synergistically formulated magnesium designed to easily penetrate intracellular spaces. To achieve this one must have at ones' command the technique to alter cell membrane permeability and a carrier mechanism to carry nutrition to the center of the cell where it is really required. With this technology, a lot of cardiac diseases listed above can be reversed with a very high rate of success. This subject is called Orthomolecular Medicine (word coined by Nobel Laureate Linus Pauling in 1968) or Intracellular Medicine. More details along with case studies are available for those interested in doing detailed studies.

On the other hand, the orthostatic hypotension test is only targeted at patients with below normal blood pressure which could perhaps be indicative of adrenal fatigue. Many times, such low blood pressure is also because the heart muscles are weak and do not contract and relax properly. Calcium causes muscles to contract and magnesium causes muscles to relax. Improper ratio of calcium to magnesium in the body is the primary cause that needs to be first corrected before arriving at an adrenal fatigue diagnosis. Again, in males weak heart muscles can also be due to low testosterone levels. I would explore all these avenues before arriving at an adrenal fatigue diagnosis.

Again, if your patients complain of low energy levels throughout the day and/or especially on waking up, I would first check the possibility of acute anemia at intracellular levels. For this the regular CBC should not be your guide. You must study Ferritin even if hemoglobin appears to be normal. Otherwise, you will miss the diagnosis of acute anemia.

If the cortisol levels appear low at 8:00 am in the morning and / or at 4:00 pm in the afternoon, then it could be that the patient is also suffering hormonal imbalance symptoms and has loss of sleep at night due to possible night sweats. In that case it is important to correct the hormonal imbalance symptoms first. A power nap for 30 minutes in the afternoon (between 2:00 pm to 4:00 pm) is recommended for executives who work under high stress and tire out by afternoon. This way the cortisol levels will change for the better and the low energy levels in the later part of the day will reduce.

Calcification of arteries, heart valves, mitral valve prolapse, etc. all point principally to an intracellular magnesium deficiency. For correction of magnesium levels at intracellular levels it is important to use only organically formulated magnesium in synergy with other supporting nutrients. It is also important to alter cell membrane permeability and have a proper carrier mechanism to carry nutrition to the center of the cell to carry out proper repairs to the heart, improve Left Ventricle Ejection Fraction (LVEF) and Cardiac Efficiency.

Which magnesium to use and which not to use

Do not use prophylactic dose of magnesium to correct intracellular magnesium deficiency. It is also not recommended to use inorganic magnesium salts like magnesium sulfate (also known as Epsom salts), magnesium chloride, magnesium hydroxide, magnesium oxide as these are not retained in the body and are readily excreted within a few hours of ingestion . Magnesium sulfate is also a strong laxative and cannot be administered at therapeutic dose levels. To be absorbed and retained in the body, magnesium must be in an organic form like a ascorbate, lactate, orotate, gluconate, etc. Elemental magnesium has to be coupled with a carrier mechanism to carry nutrition to the center of the cell where it is essentially required and with a cell membrane permeability enhancing mechanism to allow its easy passage to the center of the cell. In addition, magnesium must have other supporting nutrients which work in a synergistic manner. This is a special formulation designed to effectively alter intracellular magnesium levels and will not only be readily absorbed by the body, but also retained for prolonged periods to achieve a therapeutic effect, required to treat chronic diseases like hypertension or type 2 diabetes.

Blessings,

Pramod Vora

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Testimonials of Cardiologists

Excellent reminder like CME for all concerned.
keep up the good work Dr. Vora.

A very logical way to understand important cardiology aspects from grass root level. Once your fundamentals are clarified then rest just automatically follows. You have indeed brought about your own unique method of simplifying cardiology-kudos Dr. Vora!

We should try to link up with your expertise which would benefit people in this part of the world.

HAVE KNOWN THAT SALT RESTRICTION DOES NOT WORK EQUALLY FOR ALL HYPERTENSIVES BUT YOUR CONCEPT IS TOTALLY NEW BALL GAME TO ME WHICH I AM SURE AHA & OTHER SOCIETIES WOULD APPROVE IN TIME TO COME & CHANGE THE WHOLE IDEA OF SALT RESTRICTION SPECTRUM & HTN.

Kind regards

Dr. Ranjeet S. Baral MBBS, (JIPMER)
Ph.D.(Clinical Cardiology)
DCC (Health Ministry, JAPAN)
FAPSC (Fellowship cardiology)
Av.Med (King's College, London)
Consultant Cardiologist/Physician/Chief AME

Dr. Vora

Thank you for your review and updates about how to properly perform BP measurement.
Kenneth Phillips MD, FCCP

I thank you for your very comprehensive post on this so important subject. Invaluable information. I also visited your links, a gold mine of information. Thank you for sharing your knowledge...

Best Regards

Fernando M. Branco, Berlin, Germany.

Dear Dr. Pramod

I was astonished to find that you could use such a simple BP apparatus to use as a prognostic tool.

Really true functioning of the heart can be assessed not just by very advanced imaging technologies but also by simple tools.

Dr.Murali Krishna, Orthopedic Surgeon

Great post Pramod, If more GP's and hospitals adopted this approach the pharmaceutical industry would take a severe hit! Having the patient relax before taking a blood pressure may take extra time but it would almost certainly reduce anxiety and stress, which are inevitably the fundamental precipitators of Cardiovascular illnesses.

Adam Shaw, The Heart Guy at Adam Shaw Heart Wellbeing, [St Albans, United Kingdom](#)

Thank you so much for sharing with me. The articles you have written are awesome!!

I have been reading your articles all day long!! I am truly impressed with how you have taken what is so complicated for most of us to understand and made it simple. Thank you so much!! I look forward to using your therapies to not only heal myself but for my patients as well.

Dr. Michael Carter, M.D., Atlanta, Georgia

Dear Pramod Vora,

It is a great honor for me to connect with you. I am following your discussions and, can say so- I am learning from your experience. I am from Latvia, and, seems are the first in my country speaking about micronutrients in primary and secondary prophylaxis. You can imagine what a "wall" I meet by my colleges, working in classical medicine (following "evidence based" guidelines). I am graduated doctor in Internal medicine, but I have private practice where I am working with micronutrients. Actually in the field of orthomolecular medicine I am autodidact. I have really good experience by degenerative joint diseases and metabolic syndrome.

And, I just wanted to say, I am really thankful for your ideas, links etc.- this is a support for my daily practice.

Regards,
Antra Briede, M.D.
Latvia

Dear Dr. Vora,

I find your comments very informative and thorough on Naturopathic Cardiology Group on LinkedIn.

I loved the hypertension material. It was a treat to read.

I trained under Dr. Martin Milner at NCNM in his heart and lung clinic.

It is serendipitous to be connected to you. You truly are exemplary in your dissemination of information, education and perceptive demeanor. I would love to meet you in person someday.

Shalini Kapoor
Naturopathic Physician
Portland, Oregon, USA

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Some Unique Case Studies / Recommendations (Pitfalls for Misdiagnosis)

Reversing Left Ventricular Hypertrophy (LVH) in Ischemic Heart Disease (IHD) patients

Thiamine (vitamin B1) and magnesium play a very important part in reducing the severity of the symptoms of LVH in IHD patients.

For vitamins to work efficiently, and especially in the case of the entire range of B-Complex Vitamins, we should first ensure optimum levels of magnesium not only at serum levels but also at intracellular (RBC) levels.

While calcium helps muscles (including the heart muscles) to contract, magnesium helps muscles to relax. So having adequate levels of magnesium in the body is very important for the proper pumping action of the heart.

Again, Thiamin (vitamin B1) deficiency leads to heart enlargement. For Thiamin to work efficiently, it is advisable to take the entire range of B-Complex Vitamins from B1 to B12 as they work in conjunction with each other for energy metabolism. So taking a general B-Complex supplement is advisable to create a good foundation.

In addition, we need therapeutic doses of Thiamin (B1) and magnesium. Magnesium is required for the conversion of thiamin to its active form.

For the reversal of the symptoms of LVH, the daily intake of organically formulated minerals (which are administered in a synergistic manner with other supporting nutrients) must be as per the following therapeutic doses:

Thiamin (vitamin B1) – 10 mg twice a day for 2 to 3 months
Magnesium – 1000 mg in 3 or 4 equally divided doses for 6 to 12 months

These are therapeutic doses of nutrition which are specifically formulated to penetrate intracellular spaces where the nutrition is really required. This is known as Orthomolecular Medicine / Orthomolecular Nutrition. Doses mentioned above in mg are elemental weights.

Monitor your serum and RBC levels from time to time to ensure that you are actually raising the magnesium levels to the upper end of the Standard Reference Range:

Serum Magnesium = 1.8 to 3.0 mg/dL (0.7 mmol/L to 1.2 mmol/L)
(as per Internationally accepted Standard Reference Range)

Optimum Desirable Value: 2.4 to 2.8 mg/dL (1.0 mmol/L to 1.2 mmol/L)
(as per International Standards of Preventive and Anti-Aging Medicine)

Intracellular Magnesium

(also know as RBC Magnesium / Erythrocyte Magnesium)

Standard Reference Range = = 4.2 mg/dL to 6.8 mg/dL (1.75 mmol/L to 2.8 mmol/L)

Optimum Desirable Value = 5.5 mg/dL to 6.0 mg/dL (2.3 mmol/L to 2.5 mmol/L)
(as per International Standards of Preventive and Anti-Aging Medicine)

Make sure to discontinue magnesium supplementation for 7 days prior to drawing a blood sample to ensure that the values measured are the true retained values and are not skewed due to the recent supplements you took.

Also, check your renal profile to make sure that the serum mineral values reported in your blood report are not inflated due to poor filtration by the kidneys. To ensure your kidneys are working at optimum levels / efficiently, make sure your Renal Profile is as follows:

Creatinine = 0.8 mg/dL

Serum Uric Acid < 4.0 mg/dL

BUN \approx 12.0 mg/dL

If these values are at the higher end of the reference range, it is possible that your mineral levels will appear above normal when they are really deficient.

If your protein intake is very poor, the Blood Urea Nitrogen (BUN) value will be at the lower end of the reference range. When this happens, protein based tests like creatinine will appear low and one may inadvertently pass this off as healthy kidneys when that is not the case.

If in doubt, about efficient working of the kidneys, do the Cystatin C test. This is a more sensitive test compared to a standard renal profile. Again this is a protein based test, so ensure adequate BUN levels to interpret the results of this test.

Optimum Desirable Value:

Cystatin C = 0.7 mg/L

Blessings,

Pramod Vora

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Reversing Dilated Cardiomyopathy (DCM)

Thiamine (vitamin B1) and magnesium play a very important part in reducing the severity of the symptoms of Dilated Cardiomyopathy (DCM).

For vitamins to work efficiently and especially in the case of the entire range of B-Complex Vitamins we should first ensure optimum levels of magnesium not only at serum levels but also at intracellular (RBC) levels.

While calcium helps muscles (including the heart muscles) to contract, magnesium helps muscles to relax. So having adequate levels of magnesium in the body is very important for the proper pumping action of the heart.

Again, Thiamin (vitamin B1) deficiency leads to heart enlargement. For Thiamin to work efficiently it is advisable to take the entire range of B-Complex Vitamins from B1 to B12 as they work in conjunction with each other for energy metabolism. So taking a general B-Complex supplement is advisable to create a good foundation.

In addition, we need therapeutic doses of Thiamin (vitamin B1) and magnesium. Magnesium is required for the conversion of thiamin to its active form.

For the reversal of the symptoms of DCM, the daily intake of organically formulated minerals (which are administered in a synergistic manner with other supporting nutrients) must be as per the following therapeutic doses:

Thiamin (vitamin B1) – 10 mg twice a day for 2 to 3 months

Magnesium – 1000 mg in 3 or 4 equally divided doses for 6 to 12 months

These are therapeutic doses of nutrition which are specifically formulated to penetrate intracellular spaces where the nutrition is really required. This is known as Orthomolecular Medicine. Doses mentioned above in mg are elemental weights.

Monitor your serum and RBC levels from time to time to ensure that you are actually raising the magnesium levels to the upper end of the Standard Reference Range. Make sure to discontinue magnesium supplementation for 7 days prior to drawing a blood sample to ensure that the values tested are the true retained values and are not skewed due to the recent supplements you took.

Also check your renal profile to make sure that the serum mineral values reported in your blood report are not inflated due to poor filtration by the kidneys. To ensure your kidneys are working at optimum levels / efficiently, make sure your Renal Profile is as follows:

Creatinine = 0.8 mg/dL

Serum Uric Acid < 4.0 mg/dL

BUN ≈ 12.0 mg/dL

If these values are at the higher end of the reference range, it is possible that your mineral levels will appear above normal when they are really deficient.

If your protein intake is very poor, the Blood Urea Nitrogen (BUN) value will be at the lower end of the reference range. When this happens, protein based tests like creatinine will appear low and one may inadvertently pass this off as healthy kidneys when that is not the case.

If in doubt, about the efficient working of the kidneys, do a Cystatin C test. This is a more sensitive test compared to a standard renal profile. Again this is a protein based test, so ensure adequate BUN levels to interpret the results of this test.


Optimum Desirable Value:

Cystatin C is 0.7 mg/L.

Trust you will find this information useful.


Blessings,
Pramod Vora

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Chronic Kidney Failure (CRF) or Ischemic Heart Disease (IHD)?

Here are my observations / recommendations after going through the last twelve months of reports.

Patient is in a very critical condition. I do pray that he comes out of this and can return back to his normal life soon.

We have two serious complications - one is the failure of his kidneys (he has been on dialysis for the past few months) and at the same time we have his heart at very low Ejection Fraction of 28% to 40%.

I see that he has been on Shelcal 500 mg (calcium 500 mg + vitamin D) twice a day for the last many months. We also see calcium deposits in the brain, an indication of excessive calcium (toxicity).

If your attending doctors agree, I would like to find out if they are comfortable discontinuing calcium + vitamin D supplementation for the moment. This will be helpful under the present condition and will allow the heart to work more efficiently. I would go one step further to recommend immediately administering magnesium sulfate injections to improve cardiac efficiency, after taking a decision to stop calcium + vitamin D supplements (twice a day). Magnesium can only be effective after stopping taking of calcium supplements. This will allow his heart to begin pumping more efficiently and the Heart's Ejection Fraction can be brought up to much safer value of 50% to 60% to enable the kidneys to begin working more efficiently. Raising serum magnesium levels may also help to dissolve excessive calcium deposits (in the brain for instance) from the body and reduce calcium toxicity.

Once this has been achieved the patient's chances of return to normal life will improve considerably.

The reason why the patient may have been put on calcium supplementation during the past months, could be to counteract the low serum calcium values. But, calcium is released from the bones to counteract the acidity of the blood, due to the inefficient filtration of the kidneys. The solution is to correct the blood pH by administration of sodium bicarbonate, which has been done in the past. The serum calcium values will automatically rise once the pH is successfully controlled. Administering calcium supplement will not really help to raise serum calcium values, as the calcium will be excreted out of the body due to the acidic pH of the blood.

Also, administering magnesium will help to raise serum calcium levels. This is how the human biochemistry works. Calcium and magnesium are antagonists and work in this manner. Calcium helps muscles contract and magnesium helps muscle relax. This is how the pumping action of the heart works, as the heart is a muscular organ, and needs both calcium and magnesium. If calcium is in excess, the heart stays contracted and does not relax properly to complete the pumping action. This results in low left ventricular ejection fraction (LVEF) and poor cardiac efficiency. Low pumping action of the heart also results in inefficient working of the kidneys.

Blessings,

Pramod Vora

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