

Estimation of Serum Calcium Levels in Tribal Individuals from Chikhaldara Region, Melghat, India

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Abstract :

The present cross sectional study was undertaken among the tribes of Chikhaldara Dist. Amravati. This study used to investigate serum calcium level among the male and female tribes of Chikhaldara region Total 275 male and 319 female were taken for examination. Serum calcium level were analyzed by Trinder's method (1915). The test of statistical significant (t test) was used to compare population groups. The normal level of calcium should the alternation in all age groups of total served tribal people of Chikhaldara region.

Key words – Tribes, Chikhaldara, India, calcium, serum, Estimation,

Introduction :

Blood is viscous complex tissue fluid of red colour. The principal components of blood are Plasma or blood cells or corpuscles plasma contains inorganic & organic components. The organic components of blood plasma are chlorides, bicarbonates, Phosphate, Sodium, Potassium & Calcium they are essential to blood for normal functioning of the body tissue.

The electrolytes exists in blood as a base such as Sodium, Potassium, Calcium, Magnesium & Bicarbonate. It is important to keep the balance of electrolyte in the body blood acidity (PH) muscle action and other important processes (Dugdale 2009). The sodium ions sodium & potassium are important micronutrients to human. Most are the important minerals essential to the body which is consumed as food items Na^+ & K^+ function together in an electrogenic system in the body called Na^+ & K^+ Pump. The body needs to keep these two minerals in balance because they work opposite to each other (Buzzle Com 2011).

Calcium is present in the body in large amount than any other mineral element. It is mainly present in teeth and bone. It is in small concentration in body fluid. This ionized Ca^{+2} in the body plays important role in blood coagulation and maintaining the normal excitability of the heart muscle & nerves (Godkar 2007), There is no calcium in erythrocyte. The calcium usually determined in serum is 8.4 to 10.2 mg/100ml. During infancy and early childhood the average values approach the upper limit of this range and fall with advancing age. In man about 10 gms. Of calcium are filtered in 24 yrs. By renal glomeruli only about 200 mgs. Appear in the urine which is an ionic state as well as in the complex with citrate and other organic anions 70-90% of the calcium eliminated from the body is excreted in faeces very small amount is excreted into intestine after absorption. The daily loss of calcium in sweat is above 15 mg. Vigorous physical exercise increase the loss of calcium by the way of sweat (Deb.1990). Measuring of

calcium and PTH together can determine whether the PTH glands are functioning normally. Whether kidney executing proper amount of calcium.

The estimation of calcium can be used a diagnostic test if person has symptoms that suggest kidney stone, bone disorder, inorganic malnutrition (Lab Test 2010). Hyper calcemia effects bone function. The total body calcium within bone & serves as important structural function (Baker 2002).

The related study of calcium observed that endocrine regulation of plasma calcium is activated by interaction of parathyroid hormone. Calcitonin and active metabolites Vit.D3. Calcitonin hormone is secreted by C cells which are derived embryologically from neural crest and migrate during development in to thyroid gland of mammals (Nuel and Gezs 1978) decrease in protein will be accompanied by decreased in total calcium level.

Material & Method :

The present cross-sectional study was under taken among tribal people of Chikhaldara Dist. Amravati

During serum biochemical studies the calcium level was estimated by using estimation of serum calcium by Trinder's (1915) method. The people were distributed as age group wise. The difference between the different age group of tribal male & female of Chikhaldara were statistically analysed using analysis of variance.

Result and Discussion :

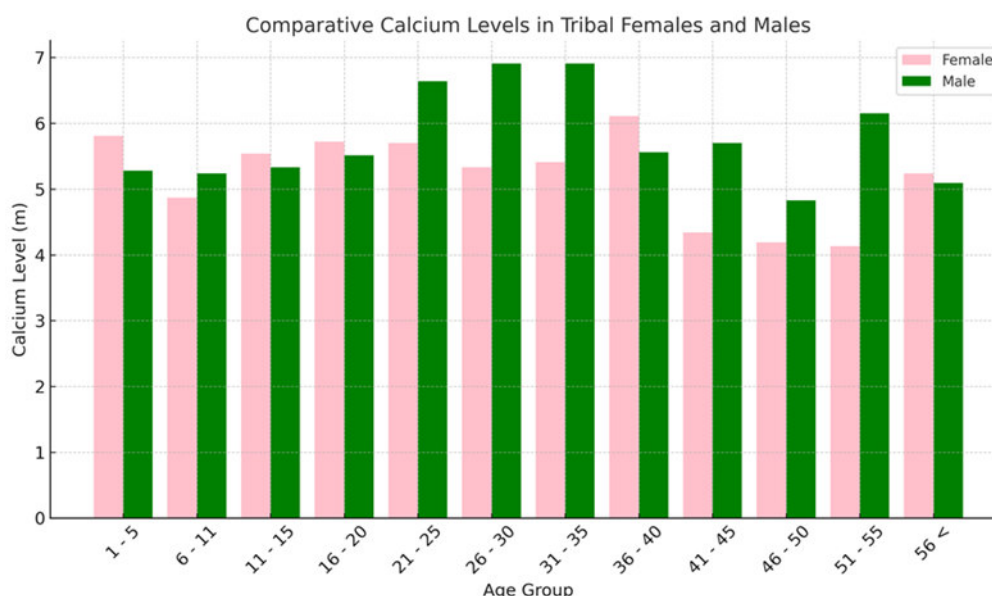
Comparative level of calcium observed in tribal females and males from Chikhaldara Dist. Amravati (M.S.) was analyzed. The observed results of study are represented in table1 given below.

Table 1. Comparative Calcium observed in tribal females and males

Age Group (Years)	Female (N)	Female (m)	Female (SD)	Male (N)	Male (m)	Male (SD)
1 - 5	18	5.81	2.94	12	5.28	1.323
6 - 10	17	4.87	1.914	16	5.24	1.242
11 - 15	39	5.54	1.83	19	5.33	1.537
16 - 20	35	5.72	1.772	30	5.51	2.195
21 - 25	63	5.7	1.873	57	6.64	1.751
26 - 30	49	5.33	1.939	17	6.91	1.88
31 - 35	21	5.41	1.854	15	6.91	2.342
36 - 40	7	6.11	2.552	18	5.56	1.64
41 - 45	19	4.34	1.219	14	5.7	1.656
46 - 50	12	4.19	1.07	19	4.83	1.159
51 - 55	15	4.13	1.464	10	6.15	1.312
56 <	24	5.24	1.794	48	5.09	1.278

Comparative Calcium Levels in Tribal Females and Males

The bar graph below represents the comparative calcium levels observed in tribal females and males across different age groups.



Results indicate that level of calcium in tribal male and female from Chikhaldara Dist. Amravati showed the alternation in all age group. It was observed to be significantly different at 0.05 & 0.01 in all age group.

Level of calcium observed in female & male tribes were below standard normal mean range level of calcium is more significance in female than males most common cause of hypocalcaemia which is nutritional deficiency especially of Vit.D. Cota (1999). Physiologically blood calcium is tightly regulated within a narrow range for proper cellular processes. According to Durlach et al (1997) the neuromuscular symptoms of hypocalcaemia are caused by a positive bathmotropic effect due to the decreased interaction of calcium with sodium channels, since calcium blocks sodium channels and inhibits depolarization of nerve and muscle fibers, diminished calcium lowers the threshold for depolarization which causes mnemonic convulsion, Arhythmias, Tetany and numbness parathesias in hands, feet around mouth and lips. Deficiency of protein decreases level of calcium and increased level of phosphate also decreases level of calcium. (Wesson et al 2009 & Serafi et al 2011)

During this study increased level serum calcium observed in age group 20-25, 26-30, 31-35, & 50-55 in male tribes than female which results in increase of astrin production, leading to increased acidity to peptic ulcers may also occur. Ziegler (2010).

At the time of this entry we were not able to identify a specific reason studied in study area. However health literacy increase with education and people living below the level of poverty have lower health literacy than those above it. Among these people there are lack of information about food habits, socio-economic constraints such as low level of education and high level poverty gender discrimination that decrease opportunities for healthful eating, living and medical facilities (Basducei 2009).

Vigorous physical exercise also affects the level of calcium as calcium executed through sweat of the tribble people.

From the above results we focus in further research is needed to solve this problem by providing them supplementary nutrients and healthy food, necessary medicine for them serum biochemical level.

According to Elliot (2010) symptoms of hyperkalemia are fairly non-specific and generally include mailuse, palpitations and muscle weakness, mild hyper ventilation may indicate a compensatory response to metabolic acidosis, which is one of the possible causes of hyperkelamia, often however the problem is detected during screening blood tests for a medical disorder or it only comes to medical attention after complications have developed such as cardiac arrhythmia or sudden death. During the medical history intake physicians focus on kidney disease and medication use, as those are the main causes.

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