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RESEARCH ARTICLE

ROLE OF SELENIUM IN PROGRESS OF CD4 COUNT

***Dr. K. Veerabhadraiah and Dr. K. Mohan Rao**

Government Medical College, Anantapuramu

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ABSTRACT

HIV infection is a global disease that disproportionately burdens populations with nutritional vulnerabilities. Selenium plays a key role in the maintenance of normal health in human population. It has been demonstrated that when taken as supplement selenium modulates the cellular response to oxidative stress, inducing a faster restoration of the endogenous anti oxidative defense system against the production of reactive oxygen species. Selenium that the body needs in order to maintain a responsive immune system, while selenium may also play a part in presenting HIV replication. An observational study was conducted on 150 HIV patients to observe the CD4 count among the patients at Government general hospital, Anantapuramu in which out of 150 HIV clients 100 (66.6%) were having high CD4 count with proportionate to their Selenium levels, remaining 50 (33.4%) clients were having low CD4 count as well as selenium levels.

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INTRODUCTION

HIV is the world's leading infectious killer. According to WHO, an estimated 39 million people have died since the first cases were reported in 1981 and 1.5 million people died of AIDS-related causes in 2013.Globally, 35.0 million [33.2–37.2 million] people were living with HIV at the end of 2013. An estimated 0.8% of adults aged 15–49 years worldwide are living with HIV, although the burden of the epidemic continues to vary considerably between countries and regions. Sub-Saharan Africa remains most severely affected, with nearly 1 in every 20 adults living with HIV and accounting for nearly 71% of the people living with HIV worldwide. Selenium appears to have a multifactorial role in HIV-1 infection. Food and nutrition for people living with HIV plays a key role in improving retention. Selenium appears to have a multifactorial role in HIV-1 infection. Selenium status affects HIV disease progression and mortality through various potential mechanisms. Adequate selenium status may also be essential in controlling viral emergence and evolution. In addition selenium may enhance resistance to infection through modulation of both cellular and humoral immunity. Plasma selenium levels affect interleukin production and subsequent changes in Th1/Th2 cytokine responses. Interacting with selenium status other nutritional factors are important in HIV-1 progression and mortality.

Corresponding author: Dr. K. Veerabhadraiah
Government Medical College, Anantapuramu

Selenium deficiency has been strongly and independently associated with mortality in HIV/AIDS.As the HIV disease advance to AIDS, the prevalence of selenium deficiency increases from 2% to 4% in asymptomatic individuals to 75% in stage IV AIDS, a finding that suggest some degree of interaction between the characteristic AIDS, wasting and selenium deficiency. New research from Africa suggest that basic multivitamin and selenium supplement might greatly lower the risk, that untreated people with the AIDS virus will get sicker over a two year period. Numerous studies have reported low selenium status in HIV-infected individuals, and serum selenium concentration declines with disease progression. In several randomized controlled trials, selenium supplementation has reduced hospitalizations and diarrheal morbidity, and improved CD4 (+) cell counts (Stone, 2010). A new research paper suggests that selenium supplementation is associated with significant health benefits in HIV-positive people, including stabilized viral loads and moderate CD4 count gains.

MATERIALS AND METHODS

An Observational study was conducted at government general hospital, Anantapur for 6 months (June 2014- December 2014) on the role of selenium in increasing the CD4 cell count. 150 samples were taken by convenient sampling method. All the samples were subjected to detailed history, clinical examination and collected the blood samples in the month of June 2014.

Table 1. Selenium and CD4 levels

N=150

S.NO	GENDER	SELENIUM LEVELS(µg/l)	CD4 COUNT
1	MALE	121	700
2	FEMALE	128	650
3	MALE	119	600
4	FEMALE	117	540
5	MALE	112	620
6	MALE	119	650
7	MALE	118	720
8	MALE	39	170
9	MALE	46	240
10	MALE	56	290
11	MALE	66	320
12	FEMALE	120	742
13	FEMALE	112	592
14	FEMALE	28	98
15	FEMALE	39	268
16	FEMALE	79	398
17	FEMALE	120	630
18	FEMALE	119	792
19	FEMALE	117	623
20	MALE	116	669
21	MALE	67	365
22	MALE	64	321
23	MALE	110	756
24	MALE	70	370
25	MALE	72	380
26	MALE	79	398
27	FEMALE	111	580
28	FEMALE	121	596
29	FEMALE	130	600
30	FEMALE	119	625
31	FEMALE	112	690
32	FEMALE	56	233
33	MALE	65	322
34	MALE	44	168
35	MALE	54	221
36	MALE	65	300
37	MALE	121	745
38	MALE	111	700
39	MALE	121	726
40	MALE	131	780
41	MALE	130	625
42	MALE	111	698
43	MALE	101	632
44	MALE	35	180
45	MALE	48	221
46	MALE	40	193
47	MALE	112	749
48	MALE	116	561
49	MALE	123	629
50	FEMALE	127	600
51	FEMALE	130	632
52	FEMALE	97	659
53	FEMALE	99	652
54	FEMALE	98	634
55	FEMALE	106	601
56	MALE	109	662
57	MALE	110	782
58	MALE	118	741
59	MALE	119	700
60	MALE	110	732
61	MALE	111	752
62	MALE	59	290
63	MALE	54	244
64	MALE	60	300
65	MALE	121	590
66	MALE	126	598
67	MALE	106	600
68	FEMALE	115	725
69	FEMALE	108	780
70	FEMALE	112	799
71	FEMALE	131	573
72	MALE	109	600
73	MALE	111	659
74	MALE	121	684
75	MALE	126	665

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76	MALE	113	624
77	MALE	72	385
78	MALE	69	362
79	MALE	118	745
80	MALE	115	741
81	MALE	117	736
82	MALE	116	725
83	MALE	120	752
84	MALE	121	736
85	MALE	125	796
86	MALE	121	793
87	MALE	71	379
88	MALE	65	300
89	MALE	59	267
90	MALE	64	300
91	FEMALE	70	342
92	FEMALE	106	597
93	FEMALE	115	568
94	FEMALE	116	576
95	FEMALE	118	700
96	MALE	140	726
97	MALE	113	668
98	MALE	121	589
99	MALE	121	600
100	MALE	68	287
101	MALE	108	665
102	MALE	101	623
103	MALE	100	615
104	MALE	121	625
105	MALE	39	187
106	MALE	56	320
107	MALE	78	398
108	MALE	45	200
109	MALE	124	700
110	MALE	126	745
111	MALE	130	785
112	MALE	121	756
113	FEMALE	106	845
114	FEMALE	105	664
115	FEMALE	98	569
116	FEMALE	99	956
117	FEMALE	107	852
118	FEMALE	106	800
119	FEMALE	121	860
120	FEMALE	56	200
121	FEMALE	67	312
122	FEMALE	45	311
123	FEMALE	34	200
124	MALE	45	220
125	MALE	121	941
126	MALE	117	960
127	MALE	113	865
128	MALE	122	870
129	MALE	123	561
130	MALE	99	623
131	MALE	56	256
132	MALE	125	865
133	MALE	35	110
134	MALE	122	905
135	MALE	45	198
136	MALE	98	963
137	MALE	53	290
138	MALE	96	825
139	MALE	67	300
140	MALE	101	650
141	MALE	78	400
142	MALE	127	623
143	MALE	67	190
144	MALE	110	694
145	FEMALE	58	290
146	FEMALE	100	569
147	FEMALE	69	380
148	FEMALE	120	805
149	FEMALE	78	400
150	FEMALE	90	900

DISCUSSION

The study has been shown that nearly 100(66.6%) samples are having high CD4 cell count along with high selenium levels, but 50 (33.4%) samples are having low CD4 cell count with low selenium levels. This shows that selenium levels and CD4 count are directly proportionate to each other.

Conclusion

This study revealed that Selenium status has greater impact on the maintenance of CD4 count and lowers the risk . If shown to be effective, selenium supplementation may be of great public health importance to HIV infected populations. Selenium supplementation remains a possible adjunct therapy in HIV

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