

MEASUREMENT OF VITAMIN D3 AND ZINC LEVELS IN COVID-19 PATIENTS WITH WIDESPREAD HAIR LOSS IN BAGHDAD CITY

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ABSTRACT : Zinc has an important role during infection with the Covid-19 virus, as it regulates the work of the immune system. Zinc deficiency leads to hair loss and graying and affects the functioning of the thyroid hormone. Between 15% and 30% of Covid-19 patients in the hospital suffer from thyroid dysfunction. However, it appears that most of these changes it is limited and that thyroid function in most patients will return to normal once the infection has cleared. Twenty two males and seventy eight females diagnosed with COVID-19 infection during the period from September 1 to December 12, 2020. All patients were suffering from cough, fever, hair loss, loss of smell, sweating, loss of appetite and respiratory discomfort. The age of patient was ranged between 15 to 70 years. 2019-nCoV IgG/IgM COMBO test card was used to diagnose SARS-COV-2 infection. Serum zinc concentration; serum Ferritin levels; TSH; T4 and serum Vitamin D3 were estimated in all patients. The highest rate of infection with the COVID-19 was in females, with a rate of 28.20% within the age group 30-39 years, as well as in males, and a percentage of 36.36% within the same age group. 86 (86%), 74 (74%), 68 (68%) and 18 (18%) patients from a deficiency in TSH, ferritin, Vitamin D3 and zinc levels, respectively. The age group 30-39 years of patients suffered from low levels of zinc, as it was 11 (61.1%), followed by the age group 40-49 years, with a rate of 4 (22.2%). The levels of TSH, ferritin and Vitamin D3 in the age group 30-39 years were 30 (34.8%), 21 (14.28%) and 25 (33.78%), respectively. While the T3 and T4 rates for all patients and for all age groups were within normal levels. In conclusion, COVID-19 patients suffered from zinc deficiency and thyroid dysfunction with significant hair loss in almost all age groups and both sexes.

Key words : COVID-19, zinc, thyroid hormone, hair loss, ferritin.

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INTRODUCTION

Many false and exaggerated claims about possible remedies have arisen as a result of the covid-19 epidemic. The significance of vitamin D in the prevention and management of covid-19 has been a source of high-profile debate, therefore the quick guidance from the National Institute for Health and Care Excellence (NICE) (NICE, 2020). Supplementing with 10-25 g of vitamin D\ day has a minor protective benefit against acute respiratory infections, but evidence on a direct impact in covid-19 is limited (Ali, 2020). Forty patients in India with COVID-19 with mild or no symptoms tested negative for COVID within 21 days after taking daily vitamin D with an initial dose of 1500 µg (Pereira *et al*, 2020). Some studies indicate an association between vitamin D deficiency and an increased incidence or severity of infection; in addition to the indirect evidence of an immune role for vitamin D

in respiratory infections (Jolliffe *et al*, 2020 and Kohlmeier, 2020), but there are no studies on the association of vitamin D deficiency with hair loss. People infected with COVID-19 have a large number of internationally registered symptoms that appear 2-14 days after exposure to the virus.

Fever, chills, cough, shortness of breath, tiredness, muscular pains, headache, loss of taste or smell, sore throat, nasal congestion, nausea, vomiting and diarrhea are some of the symptoms that the patient may experience (Kadhun *et al*, 2021). Cases of hair loss, on the other hand, were not officially recorded, but physicians and patients reported them to the media and on social media sites (Ralph *et al*, 2021). There is no reliable scientific evidence linking COVID-19 to thyroid illness. However, in SARS, several scientific investigations have found a reduction in thyroid hormone levels (triiodothyronine -T3

Table 2 : Vitamin D3, zinc, ferritin and hormones levels in COVID-19 patients.

Age groups (year)	Zinc(n=100)			TSH(n=100)			T3(n=100)			T4(n=100)			Vit D3(n=100)			Ferritin(n=100)		
	N	AN↑	AN↓	N	AN↑	AN↓	N	AN↑	AN↓	N	AN↑	AN↓	N	AN↑	AN↓	N	AN↑	AN↓
10-19	14 (17.5)	0(0)	0(0)	10 (8.77)	0(0)	4(3.6)	14(14)	0(0)	0(0)	14 (15.2)	0(0)	0(0)	4(12.8)	0(0)	10(6.8)	4(15.3)	0(0)	10 (13.51)
20-29	23 (28.76)	0(0)	1(5.5)	1(7.14)	0(0)	23 (26.7)	24(24)	0(0)	0(0)	22 (23.9)	0(0)	2(25)	5(16)	0(0)	17 (11.56)	4(15.3)	0(0)	20 (27.02)
30-39	17 (21.25)	2(100)	11 (61.1)	0(0)	0(0)	30 (34.8)	30(30)	0(0)	0(0)	26 (28.2)	0(0)	4(50)	9(28.8)	0(0)	21 (14.28)	5(23.1)	0(0)	25 (33.78)
40-49	14 (17.5)	0(0)	4 (22.2)	1(7.14)	0(0)	17 (19.7)	18(18)	0(0)	0(0)	17 (18.4)	0(0)	1 (12.5)	8(25.6)	0(0)	12 (8.16)	6(31.2)	0(0)	12 (16.21)
50-59	4(5)	0(0)	2 (11.1)	1 (7.14)	0(0)	5(5.8)	6(6)	0(0)	0(0)	6(6.5)	0(0)	0(0)	3(9.6)	0(0)	4 (2.72)	3 (11.5)	0(0)	3 (4.05)
60-69	6(7.5)	0(0)	0(0)	1 (7.14)	0(0)	5(5.8)	6(6)	0(0)	0(0)	6(6.5)	0(0)	0(0)	2(6.4)	0(0)	3 (2.04)	3 (11.5)	0(0)	3 (4.05)
70-79	2(2.5)	0(0)	0(0)	0(0)	0(0)	2(2.3)	2(2)	0(0)	0(0)	1(1.1)	0(0)	1 (12.5)	1(3.2)	0(0)	1 (0.68)	1(3.8)	0(0)	1 (1.35)
Total	80	2	18	14	0	86	100	0	0	92	0	8	32	0	68	26	0	74

N: normal, AN↑: abnormal (high), AN↓: abnormal (low).

et al, 2020) in Iran, they found that 46.5% of COVID-19 patients had vitamin D insufficiency, according to a meta-analysis. In Turkey, it appeared that 57 (36.1%) of male patients and 100 (29.0%) of female suffered from hair loss, researchers believed that the cause were anemia and/ or eczema (Metin, 2020). In Iraq, COVID-19-related anagen effluvium in a patient was still being discovered. To address a concomitant severe COVID-19-related urticaria and maculopapular rash, the patient was given low dosage systemic steroids, which she reacted to (Shanshal, 2020). In Italy, Lania et al (2020) found that 74.6% infected with coronavirus had normal thyroid function. As for 20.2% of patients, they had low TSH levels and (5.2%) had high TSH levels. While, 53% of patients had elevated levels of Free T4. TSH was lower in the elderly (Lania et al, 2020).

The current study did not agree with the results of the researchers' study in Spain in terms of hair loss, as all Iraqi patients were suffering from hair loss of both sexes. In Spain and Turkey, men with COVID-19 suffered from hair loss more than women. The reason may be that the expression of androgens which leads to an indication of the severity of the disease, and this also causing alopecia and grey hair (Goren et al, 2020 and Turkish Republic Ministry of Health covid19, 2020).

Studies in most countries have shown that increased levels of ferritin are due to cytokine production and phagocytosis has been found in severe COVID-19 patients. Ferritin is associated with poor or delayed diagnosis and can worsen the health of COVID-19 patients comparing with the ferritin level in non-severe patients (Lin et al, 2020).

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