

## THE FREQUENCY AND EXPRESSION OF FRANK'S EARLOBE SIGN IN PATIENTS WITH COVID-19

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### Introduction

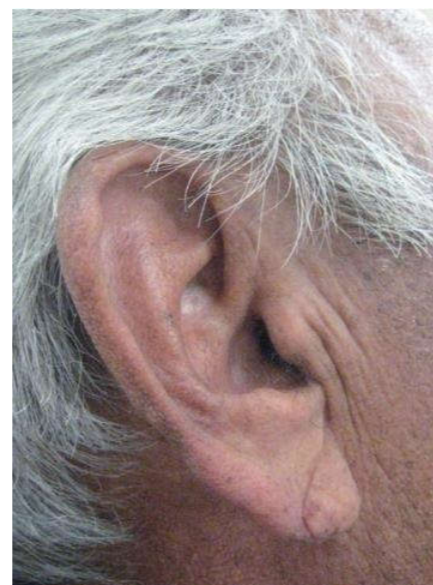
During the COVID-19 pandemic, numerous signs and clinical phenomena were investigated in regard to their association with SARS-CoV-2 infection, especially the cutaneous signs from various body regions. Previously there was described an auricular COVID-19 marker, with an edema involving the superior tragus, supratragus notch and the ascending branch of the helix. The Frank's Sign (FS) is an established auricular marker of cardiopulmonary disease and may be an another potential COVID-19 marker, due to the severe impact of the disease on the cardiopulmonary system.

### Keywords

COVID-19, Frank's sign, ECG dispersion mapping

### Purpose

Evaluating the frequency and expression of Frank's sign in patients with COVID-19, in comparison with healthy controls.



### Material and methods

There were enrolled 60 individuals (aged 35-60 years), of which: 40 COVID-19 patients (20 – severe form, post-ventilator therapy; 20 – mild form, outpatient care) and 20 healthy controls (negative PCR, no COVID-19 history). FS was identified by an experimented investigator, and special criteria for FS expression were developed, based on the quantitative features (length, indentation degree). The activity of cardiovascular system was evaluated via an autonomic index (MI – myocardial index) of vascular coronary system regulation (ECG dispersion mapping).

### Results

- In patients with severe COVID-19, FS is 2 times more common than in mild COVID-19 and 3 times more common when compared to controls.
- In severe patients, the FS intensity is 5 times higher vs. patients with mild form and 10 times higher vs. healthy people.
- There was a higher frequency ( $p < 0.05$ ) and intensity ( $p < 0.001$ ) of FS in severe COVID-19 than in mild form.
- The same trend was observed for MI values ( $p < 0.001$ ).

Nr.	Investigated groups (n=60)	Frank's Sign		Autonomic myocardial indices (MI, %)
		Frequency (n, %)	Intensity	
1	COVID-19/severe (post-ventilator therapy) (n=20)	6/30%	11.52±0.566	36.25±4.15%
2	COVID-19/mild (n=20)	3/15%	2.43±0.72	16.91±2.58%
3	Healthy controls (n=20)	2/10%	1.22±0.51	8.66±3.15%
	$p^{1-2}$	$p < 0.05$	$p < 0.001$	$p < 0.001$
	$p^{1-3}$	$p < 0.05$	$p < 0.001$	$p < 0.001$
	$p^{2-3}$	$p > 0.05$	$p > 0.05$	$p < 0.05$

### Conclusions

- Our preliminary results showed a correlation of the presence and expression of the diagonal ear lobe crease (Frank's sign) with the clinical variants of the disease.
- The auricular signs (Frank's sign and other auricular marks) need further study in order to identify their predictor roles and their significance in the COVID-19 disease course.