

WTAT IS THE MAIN PREDICTIVE CARDIOVASCULAR DISEASE RISK FACTOR IN CONTEMPORARY YOUNG TRAIN CREW?

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Background and aims. The essential hypertension among people worked on the train is sought may result from high professional stress.

Work stress is a risk factor for cardio-metabolic diseases [Magnusson Hanson LL, Westerlund H, Goldberg M. et al. *Work stress, anthropometry, lung function, blood pressure, and blood-based biomarkers: a cross-sectional study of 43,593 French men and women. Sci Rep. 2017 Aug 24;7(1):9282*].

The aim of our study was to obtain the main predisposing cardiovascular disease risk factor during 6 years' time span in train crew.

Methods. 95 train drivers and their assistants aged 20-44 years (mean (M±SD) 31.3±7.7 yrs) underwent inpatient periodic assessment including Holter monitoring of heart rate and blood pressure (BP) and biochemical markers in 2013. Then they were annually monitored during 2014-2019.

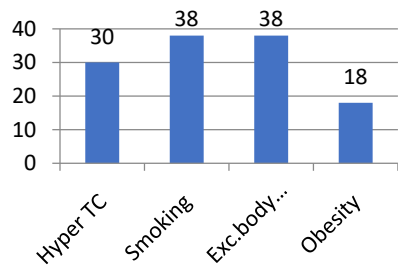


Fig. Distribution of risk factors in 2013, %

Group	Total cholesterol, mmol/L	Triglycerides, mmol/L	LDL, mmol/L	HDL, mmol/L
Train drivers with new AH in 2013	4.6±1.1	1.1±0.7	3.0±1.1	1.4±0.3
Train drivers with new AH in 2019	5.1±1.0	2.1±0.7*	2.8±0.7	1.4±0.3
Train drivers with normal BP in 2013	4.4±1.1	0.9±0.6	2.8±1.0	2.8±1.0
Train drivers with normal BP in 2019	5.0±0.9	1.6±0.8*	2.8±1.1	2.8±0.7

Table 1. Lipid profile in train drivers with developed arterial hypertension and normal BP, * - p<0.05

The following risk factors were accessed :

- current smoking,
- systolic and diastolic blood pressure;
- total cholesterol >5,0 mmol/l;
- high-density lipoprotein (HDL) cholesterol <1.0 mmol/l;
- low-density lipoprotein (LDL) cholesterol >3.0 mmol/l;
- triglycerides >1.7 mmol/l;
- excessive body weight - body mass index (BMI) 25-29 kg/m²;
- obesity – BMI >30 kg/m²;
- glycaemia (5.6-6.9 mmol/l).

Results. Elevated BP (mild or moderate arterial hypertension (AH) stage I-II) in 2013 had 35 patients, mean disease duration was 6.7±4.3 yrs, time of onset - 28.4±6.2 yrs. The most prevalent risk factors in the whole group were elevated body weight (38 %), smoking (38 %), hypercholesterolemia (30 %) and obesity (18 %; fig.).

Group	SBP day, mm Hg	DBP day, mm Hg	SBP night, mm Hg	DBP night, mm Hg	Nocturnal decline, %
Train drivers with new AH in 2013	125.2 ±7.5	74.1 ±6.9	117.2 ±11.0	64.7 ±8.6	7.7±8.2
Train drivers with new AH in 2019	126.7 ±3.9	74.7 ±4.7	118.2 ±7.8	67.5 ±8.0	8.4±8.2
Train drivers with normal BP in 2013	120.6 ±7.2*	70.4 ±6.1*	114.0 ±8.2	64.1 ±7.5	7.3±6.6
Train drivers with normal BP in 2019	124.2 ±5.7	73.7 ±6.0	113.2 ±8.4	63.5 ±6.5	11.4 ±7.2*

Table 2. Blood pressure at day and night in 2013 and 2019. * - p<0.05

After 6 year follow-up 23 patients had developed AH. Only in this group body weight has been increased from 85.8±9.2 to 93.2±12.8 kg (p<0.01). Despite the mean systolic and diastolic BP at day and night were within the normal range, the day systolic (124.8±6.8 vs 120.8±6.1 mm Hg) and diastolic BP (74.4±6.8 vs 70.1±6.1 mm Hg) in 2013 were significantly higher in those had developed AH (table 2).

No difference was found between groups in 2013 in smoking rate and lipid profile features.

Conclusion. The main negative prognostic AH risk factor in train drivers was weight gain. Health professionals must be aware and more active in promotion of health nutrition among workers in high occupational stress conditions.

