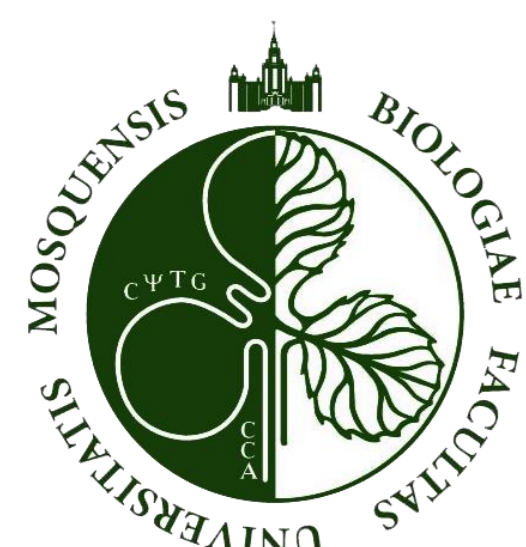




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BACKGROUND

The antioxidant system is a universal indicator of metabolic balance and protects tissues from damaging oxidative processes.

Growth hormone deficiency (GHD) is associated with a high risk of developing metabolic disorders.

OBJECTIVES

The aim of the study was to examine the effects of an inadequate GH secretion on the markers of the blood antioxidant system in childhood onset adult GHD patients after conclusion and discontinuation of GH therapy

METHODS

- ✓ The study included 10 adult patients (3 women) aged 18 to 26 years, median 23 years, with childhood onset confirmed GHD. All patients received GH therapy in childhood to achieve target height and subsequently discontinued GH therapy.
- ✓ 15 healthy adult volunteers were included in the control group.
- ✓ The blood antioxidant system was examined using superoxide dismutase (SOD) and catalase activities; ceruloplasmin levels (CP); total antioxidant capacity (TAC) of plasma; non-protein thiol levels, and thiobarbituric acid reactive substances (TBARS) levels.

The parameters of the blood prooxidant and antioxidant systems

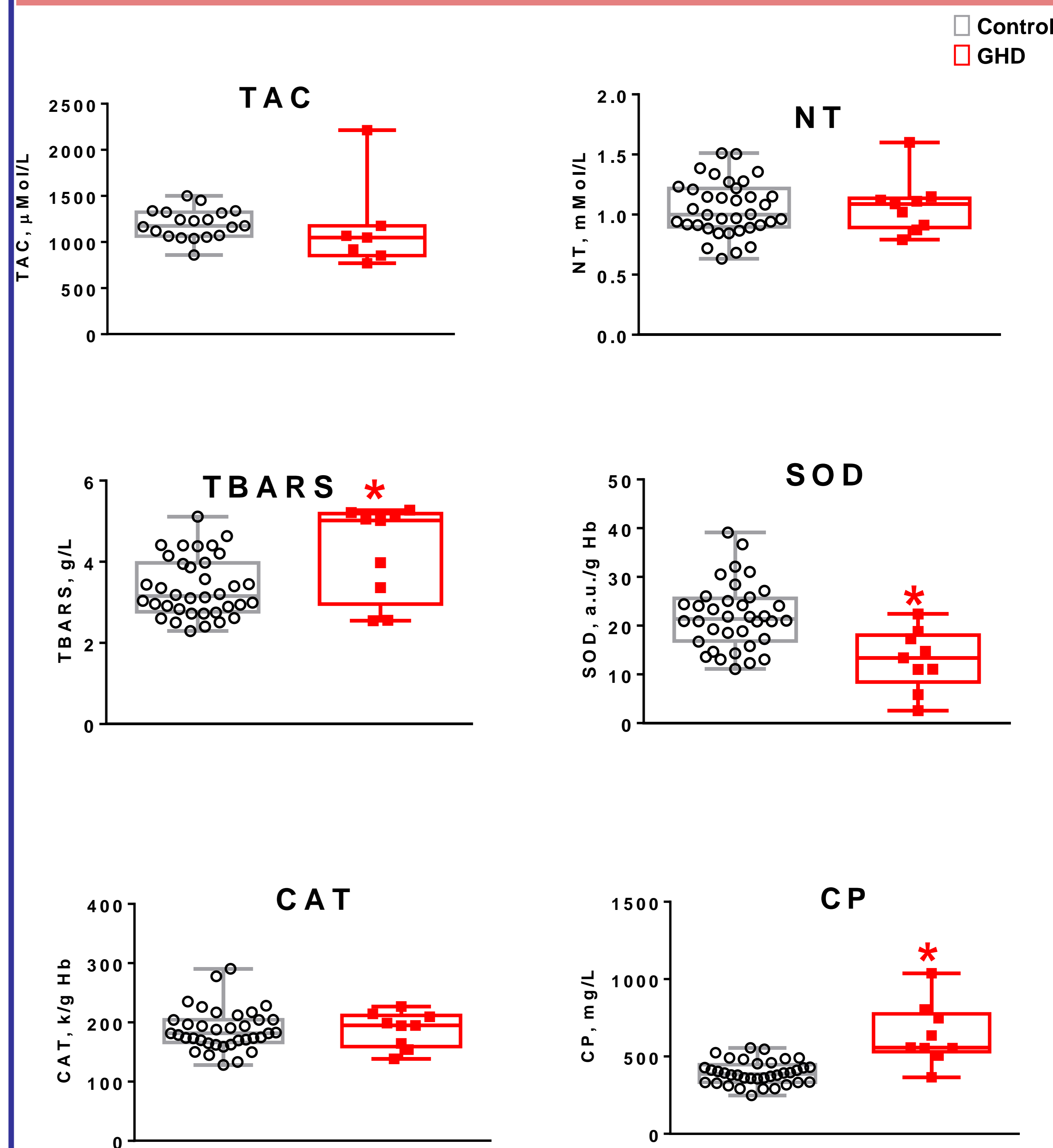
Parameters	Substance function
Total antioxidant capacity of plasma (TAC)	<ul style="list-style-type: none"> ➢ evaluated by FRAP (ferric reducing antioxidant power or ferric reducing ability of plasma), ➢ value proportional to the reducing power of the nonenzymatic antioxidants in the plasma (mainly uric and ascorbic acids)
Non-Protein Thiols, (NT)	Proportional to reduced glutathione level
Thiobarbituric acid reactive substances (TBARS)	Proportional to the level of malondialdehyde (MDA) – the end product of lipid peroxidation
Erythrocyte superoxide dismutase activity (SOD)	Utilization of superoxide anion radicals in erythrocytes with the formation of hydrogen peroxide
Erythrocyte catalase activity (CAT)	Catalyzes the decomposition of hydrogen peroxide to water and oxygen
Ceruloplasmin (CP)	<ul style="list-style-type: none"> ➢ Converts the superoxide anion radicals in plasma into water without forming hydrogen peroxide ➢ Plays a role in the transport, distribution and metabolism of Cu and Fe, which initiate the generation of reactive oxygen species (ROS)

Authors have nothing to disclose

RESULTS

- ✓ Elevated TBARS and CP levels (median 5.02 vs 3.15 nMol/mL, 558 vs 387 µg/mL, correspondingly) in GHD patients compared to healthy volunteers.
- ✓ SOD activity also elevated in GHD patients (13.4 vs 21.4 a.u./g Hb).

statistical significance between parameters of control and case groups, value was evaluated using Mann — Whitney U- test, p<0.05



CONCLUSIONS

- The present work demonstrates that:
- the blood antioxidant system parameters are **impaired** in childhood-onset GHD adults after treatment discontinuation
 - which indicates **oxidative stress** development in the absence of therapy

