The effect of stress of academic examination on some physiological parameters of boy students of veterinary medicine College – university of al- qadisyia

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Abstract

This study was carried out to investigate the effect of stress which caused by academic examination on some physiological parameters of students of college of veterinary medicine in university of Al-qadisyia and for this objective we measure The studied physiological parameters for twenty five students from veterinary medicine college five students from each stage ;in day of examination ,also these parameters were measured for five volunteers as control group .the age of students and volunteers ranged from (23-19) years the studied parameters were include , systolic blood pressure ,red blood cells count, packed cell volume , thrombocytes count , neutrophils count , eosinophils count , monocytes count , and lymphocytes count .and heart rate. heart rate and systolic blood pressure and neutrophils count were significantly increase ($p<0,05$) .in all students groups compared with control group . which indicate affected of these parameters by stress . while other parameters were not revealed significant changes.

Introduction:

All of us are fearful of exams whether it is a driving test or an dual promotion :orexam,it does cause us to lose some sleep.physiological studies have shown that stress can affect the physiological parameters (1) . These changes include increase in red blood cell , platelets and neutrophils count where aseosinophils,lymphocytes and monocytes are said to decrease in number: (1) . We thus designed a study to confirm the same in our college students.

Materials and methods

Students:

Twenty five boy students at veterinary medicine collage-university of AL-Qadysia , we reenrolled randomly for the study (Five Students from each stage of our college in addition , there is five persons out of the students used as a control group.The age of all subjects in this study around (19-23) years (mean-21 years). Selection was done one day prior to first monthly examination of each study of our college while the person in control group there is no examination. the students were subjected to medical check up including blood pressures and temperature recordings. The students who suffered from any disease excluded from the study . Final enrollment of 25 healthy students and 5 healthy volunteers. Was made.

None of the students and volunteers were taking any long term medication or drugs such as hormone, hematonics , vitamins etc.

Methods:

1-blood sampling:

The samples of blood was collected under aseptic condition,1.2mg of anhydrous of E.D.T.A. per milliliter of blood was used as anticoagulant(3). It was made save that no frothing of blood accrued during transforming of blood from syringe to tube.

2-counting of blood cells:

Counting of red blood cells , total leucocytes and platelets was done by visual mean making use of neubaure Chamber (**3**) .

Red blood cells were counted making a 1:200 dilution of blood hyme's solution. Leucocytes count was done making a 1:20 dilution in Thoma's solution. Counting of platelets was carried out making 1:20 dilution with 1% ammonium oxalate solution.For differential leucocytes count , blood film were stained with Wright's stain. Compound microscope was used throughout the study. The records of various physiological parameter was

entered in specially designed table . and SPSS system was used to determine the significant differences between group ,which are represent the following

1-C=control group (out of the students)
2-T1=First stage students
3-T2=Second stage students
4-T3=Therid stage students
5-T4=Fourth stage students
6-T5=Fifth stage student

The data were analyzed by (SPSS) system.

Results

table (1) Effect of examination stress on RBCs count of students.

Variables	C	T1	T2	T3	T4	T5
RBC Millions/cu.mm	4.90 ±0.02	4.88 ±0.01	4.86 ±0.03	4.95 ±0.02	4.92 ±0.03	4.83 ±0.01

- values were expressed as mean ± S.E.
- there is no significant differences between groups.

Table(2) Effect of examination stress on PCV% of students

Variables	C	T1	T2	T3	T4	T5
Hematocrit%	37.8 ±0.23	38.2 ±0.20	36.9 ±0.12	37.9 ±0.15	40.2 ±0.33	39.5 ±0.13

- values were expressed as mean ± S.E.
- there is no significant differences between groups.

Table(3) Effect of examination stress on throm bocyte count of students.

Variables	C	T1	T2	T3	T4	T5
platelets/cu.m.m	243120.60 ±842.20	250122.64 ±92013	233150. 54 ±560.14	260320.63 ±720.13	244124.40 ±320.15	239720.50 ±920.13

- values were expressed as mean ± S.E.
- there is no significant differences between groups

Table(4)Effect of examination stress on WBCs count.

Variables	C	T1	T2	T3	T4	T5
Total leucocytes count/cu.mm	8920.02 ±83.13	8540.12 ±77.25	7990.20 ±65.13	8560.30 ±44.20	9720.30 ±50.30	8850.30 ±77.20

- values were expressed as mean± S.E.
- there is no significant differences between groups

Table(5)Effect of examination stress on neutrophils of students .

Variables	C	T1	T2	T3	T4	T5
Neutrophils cu.mm	a 4550 63.17±	b 4970.03 ±55.13	b 4870.13 ±40.22	b 5230.14 ±30.13	b 4860.20 ±29.30	b 4855.19 ±30.14

-values were expressed as mean +_ S.E.
-the different small letters= significant differences between groups.($p \leq 0.05$)

Table (6) Effect of examination stress on Eosinophils ofstudents.

Variables	C	T1	T2	T3	T4	T5
Eosinophils/ Cu.mn	230.4 ±7.1	229.3 ±5.6	228.4 ±4.5	231.9 ±3.2	233.8 ±9.2	229.8 ±8.2

- values were expressed as mean ± S.E.
- there is no significant differences between groups.

Table (7) Effect of examination stress on monocytes of students.

Varaiables	C	T1	T2	T3	T4	T5
monocytes/ cu.mn	168.02 ±3.9	172.52 ±4.1	169.12 ±3,5	173.20 ±7.2	171.60 ±3.5	170.40 ±5.1

- values were expressed as mean ± S.E.
-there is no significant differences between groups.

Table(8) effect of examination stress on lymphocytes of students.

Variables	C	T1	T2	T3	T4	T5
Lymphocytes/ Cu.mm	2520.20 ±50.1	2633.13 ±46.2	264.30 ±30.10	2722.13 60.10±	2543.20 ±30.20	2650.40 ±33.20

- values were expressed as mean± S.E.
-there is no significant differences between groups.

Table (9) effect of examination stress on Basophils of students.

variables	C	T1	T2	T3	T4	T5
Basophils/ Cu.mm	30.17 2.3±	29.22 ±4.5	28.88 ±3.5	31.29 ±6.5	28.77 ±2.9	27.88 ±2.5

- values were expressed as mean± S.E.
- there is no significant differences between groups.

Table (10) effect of examination stress on systolic blood pressure of students.

Variables	C	T1	T2	T3	T4	T5
Systolic blood pressure mm.Hg	a 120.20 ±0.11	b 139.30 ±0.20	b 140.25 ±0.10	b 141.21 0.32±	B 134.70 ±0.13	b 88.5 ±6

- values were expressed as mean ± S.E.
-the different small letters= significant differences between groups.($p \leq 0.05$)

Table(11) effect of examination stress on heart rate of students.

Variables	C	T1	T2	T3	T4	T5
Heart rate beat/mint	a 73.5 ±2	b 88.4 ±3	b 85.3 1±	b 87.6 ±4	b 86.7 ±2	b 88.5 ±6

- values were expressed as mean ± S.E.
- the different small letters = significant differences between groups.($p \leq 0.05$)

Discussion

Stress refers to conditions that arouse anxiety or fear. Anxiety can be defined as an emotion characterized by feelings of anticipated danger, tension and distress and by tendencies to avoid or escape. Human lives are filled with anxieties of different types in danger, chronic burdens, life changes and hassles. Life would be simple indeed if our needs could always be satisfied. But as we know, there are many obstacles … both environmental and internal, which interfere with gratification of our needs and complicate our strivings towards our goals. Delays, lacks, failures, losses, restrictions, conflicts and pressures buffet us all. Such events place adjustment demands or stress on us.(1) This study which employed real life stress situation of acute nature i.e. examination, showed that the stress of examinations in our college students was significant enough to produce changes in blood cell parameters. The common observation of transient rise in systolic blood pressure during stress was also present in our study. Physiological studies

have shown that stress from any source can influence on the endocrine, hemopoietic and immune systems. Cytokines and cortisol seem to play an important role in the communication between these system(1,2).The well documented changes that occur are increase in erythrocytes, neutrophils and platelets, whereas lymphocytes, eosinophils and monocytes decrease in number. The magnitude of stress-induced changes is significantly reduced in adrenalectomised animals. It is suggested that endocrine factors released during stress modulate leucocyte trafficking and result in the redistribution of leucocytes between the blood and other immune compartments(4) . The activation of sympathetic nervous system may also have a role to play. Lymphocytes and monocytes express receptors for several stress hormones, including norepinephrine and epinephrine. Thus stressful events could alter immune function (5) .This alteration in immune function due to decrease in lymphocytes and basophils was found in the subjects of this study, confirming the stress related changes reported in the literature.Stress of academic examinations also significantly affects the erythron variables. There is increase in number of large red blood cells with increased hemoglobin, which cannot be explained by shifts of fluid out of the intravascular space, concentrating non-diffusible blood constituents (1). Moreover, it has been suggested that stress induced pro-inflammatory cytokine production may stimulate the proliferation of hemopoietic cells (6).Studies have confirmed a significant increase in hemoglobin and mean corpuscular volumes in volunteers put under stress. Interestingly, a similar observation on a large number of students was recently reported after the stress caused by academic examinations. An increase in volume of erythrocytes has been reported after short intensive exercise and such a change has been interpreted to be due to an increase in lactate uptake (7).In our study no significant change in red blood cells or hematocrit was observed.All of us are familiar with the stress we undergo during exams. This stress can vary from mild to severe. The importance of that particular exam determines the amount of stress we undergo. Exams in medical schools are particularly stressful as they involve much study and also that the results do affect the future study or training of the student. No one has yet come up with a magical shortcut or substitute for adequate preparation through study. Of course, mastery of the subject is sometimes not enough if the student is emotionally upset, fails to interpret questions properly, has his knowledge organized in such a way as to interfere with quick recall, or is overtired. Exams emphasize the ability to understand, organize and recall information. The student is expected to show the depth and breadth of his knowledge. All these can be affected by sheer stress of the situation. Fear of failure or poor performance is quite overwhelming. It is common to hear remarks such as “I forgot”, “I studied but failed to recall”, and “I just got confused”. All these are due to the stress; the exam puts on the student. In this world of competition, unfortunately exams are currently the only means to judge students knowledge. In the foreseeable future things don’t seem to change. Students need to adjust themselves so as to cope with this stress effectively. The teachers, instructors and other staff members have an important role in behavioral therapy to students. High social support appears to attenuate the magnitude of changes in immune cells suggesting a role for social support in protecting against immune decrements during times of stress (6) This will enable the students to cope adequately with exam stress and will improve their performances.

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تأثير الإجهاد الناتج من جراء الامتحانات الأكاديمية في بعض المعايير الفسلجية لطلبة كلية الطب البيطري في جامعة القادسية

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اجريت هذة الدراسة لمعرفة مدى تاثير الاجهاد الناتج من جراء الامتحانات الاكاديمية في بعض المعايير الفسلجية لطلبة كلية الطب البيطري في جامعة القادسية ولتحقيق هذا الهدف تم قياس المعايير المدروسة لخمسة وعشرون طالب من كلية الطب البيطري بواقع خمسة طلاب من كل مرحلة دراسية وذلك في يوم اجراء الامتحان كذلك تم قياس المعايير المدروسة لخمسة متبرعين من غير الطلبة , تراوحت اعمار الطلبة والمتبرعين(19−23) سنة . وكانت المعايير المدروسة , معدل ضربات القلب في الدقيقة , ضغط الدم الانقباضي , العدد الكلي لخلايا الدم الحمر , حجم خلايا الدم المرصوص , العدد الكلي للاقراص الدموية , العدد الكلي لخلايا الدم البيض , عدد خلايا العدلات , عدد خلايا الحمضات , عدد الخلايا وحيدة النواة . وعدد الخلايا اللمفاوية . وقد اظهر كل من معدل ضربات القلب في الدقيقة وضغط الدم الانقباضي وعدد خلايا العدلات زيادة معنوية . ($0,05p<$) في الطلبة لجميع المراحل مقارنة مع المتبرعين مما يدل على تأثير الإجهاد على هذه المعايير في حين لم تظهر بقية المعايير المدروسة اي تغييرات معنوية .