ELECTROCARDIOGRAPHIC STUDY OF THE EFFECT OF MASTURBATION ON NORMAL INDIVIDUALS

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Summary: An electrocardiographic study of 120 normal individuals of age group between 22 years to 38 years was carreid out to observe changes manifested in the electrocardiogram under the effect of masturbation.

Twelve-lead electrocardiograms was recorded. E.C.G. were taken twice in all the subjects: (i) before ejaculation, and (ii) after ejaculation. After ejaculation, in electrocardiogram, following changes were observed: (i) increase of QRS-amplitude, (ii) increase of T-wave amplitide, (iii) decrease of heart rate, and (iv) elevation of St-segment.

Blood pressure was also estimated in all the subjects before and after ejaculation. Blood pressure levels increased after ejaculation in all the cases.

The fact that any sort of stressful condition may induce the discharge of epinephrine and nor-epinephrine from the adrenal medulla as well as adrenergic nerve endings, led us to estimate the concentration of epinephrine and nor-epinephrine in plasma before and after ejaculation. The result showed, increase of concentration of epinephrine and nor-epinephirne after ejeculation. Hence epinephrine and nor-epinephrine, were thought to be responsible to cause changes in the electrocardiographic pattern after ejeculation.

Key words: E.C.G. masturbation catecholamines

INTRODUCTION

It is well known that any stressful condition affects the circulatory system. This very fact led us to enquire if the stressful effect of masturbation would influence the electrocardiogram.

MATERIALS AND METHODS

One hundred twenty normal persons of age between 22 years to 38 years were studied. These stubjects came to Physiology Department for examination of their semen; Obstetrics and Gynaecology Department referred these male partners for check up to find out the cause of primary or secondary sterility.

The subjects were not allowed to smoke since morning on the day of taking E.C.G. They were asked to keep themselves abstinated from ejaculation since last 4 days. The time preferred for taking of E.C.G. was late morning. Each subject, before taking of E.C.G., was asked to lie for 20 minutes. Cardiomat (Siemens Co., W. Germany) was used for recording E.C.G. E.C.G. was taken with 12 leads. Now, the subject was allowed to ejaculate by masturbation and

the sample of semen was collected in a clean bottle for semen analysis. Immediately afterwards E.C.G. was taken once more on the same subject.

Blood pressure was taken before and after ejaculation.

Epinephrine and nor-epinephrine in plasma were estimated before and after ejaculation. For estimation of epinephrine and nor-epinephrine fluorometric method was used (4).

Samples of semen were examined, within an hour of discharge, after its liquefication.

RESULTS

The effect of masturbation was studied on 120 normal healthy men of age group between 22 years to 38 years.

After ejaculation, in electrocardiogram, following changes were observed : (Fig.-1, Fig.-2;

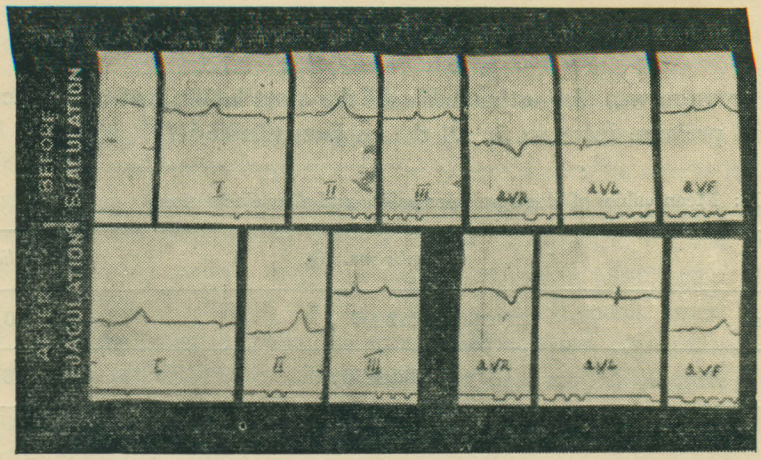

Fig. 1 : Electrocardiographic changes before and after ejaculation.

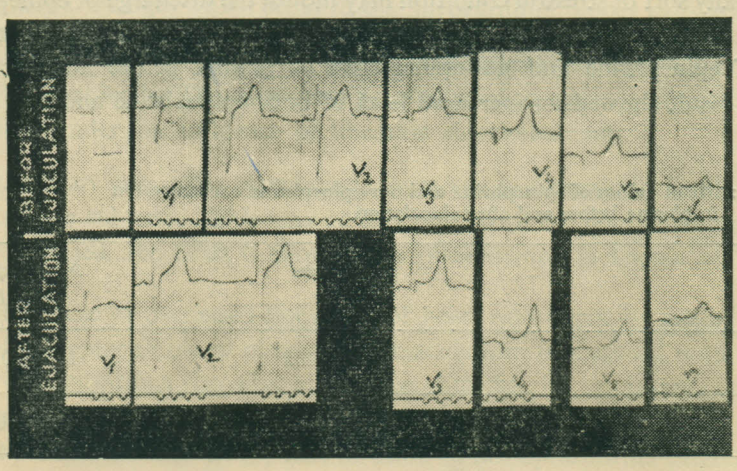

Fig. 2 : Electrocardiographic changes before and after ejaculation.

Table-I), (i) increase of QRS-amplitude, (ii) increase of T-wave amplitude, (iii) decrease of heart rate, and (iv) elevation of ST-segment.

TABLE I: Mean values of Qrs-amplitude, T-wave amplitude, St-segment elevation and heart rate before and after ejaculation.

	QRS-amplitude (mm)	*T-wave amplitude (mm)*	*St-segment elevation (mm)*	*Heart rate (per min)*
Before ejaculation	20 ± 2	5 ± 2	0.4 ± 0.1	75 ± 8
After ejeculation	22 ± 4	7 ± 2	0.5 ± 0.1	70 ± 6

±S.D.

The blood pressure was also estimated in all the cases before and after ejaculation. After ejaculation blood pressure increases in all the subjects (Table-II)

TABLE II: Mean values of blood pressure before and after ejaculation.

	Systolic mm. Hg.	*Diastolic mm. Hg.*
Before ejaculation	112±6	70±4
After ejaculation	120±10	76±8

±S.D.

The fact that any sort of stressful condition may induce the discharge of epinephrine and nor-epinephrine from the adrenal medulla and the adrenergic nerve endings, led us to estimate the concentrations of epinephrine and nor-epinephrine in plasma before and after ejaculation (Table-III). The result showed an increased level of both epinephrine and nor epinephrine in

TABLE III: Mean values of epinephrine and nor-epinephrine concentration in plasma before and after ejaculation.

	Epinephrine (μg/L)	*Nor-epinephrine (μg/L)*
Before ejaculation	1.10±0.55	1.95±0.45
After ejaculation	5.15±0.25	6.90±0.50

±S.D.

plasma after ejaculation. But, the rise of nor-epinephrine in plasma after ejaculation was found to be relatively more.

Table IV showed the semen examination report which were found to be more or less normal.

TABLE IV: Report of semen examination - sperm count, its volume, viscosity and motility.

Sperm count (mil/ml)	*Volume (ml)*	*Viscosity*	*Percent of motility*
110 ± 22	3.5 ± 1.2	Normal	90 ± 8

±S.D.

DISCUSSION

Under the effect of stress, the adrenal medulla and the adrenergic nerve endings discharge epinephrine and nor-epinephrine. Because masturbation is also a stressful affair, an idea of discharge of epinephrine and nor-epinephrine in the system during its course led us to think to estimate the concentration of catecholamines in plasma before and after ejaculation. Estimation of epinephrine and nor-epinephrine was done with the fluorometric method (4). The result showed increase of both the amines in plasma after ejaculation (Table-III). Therefore, it is found that under the effect of stressful condition of ejaculation, there would be discharge of epinephrine and nor-epinephrine into the blood circulation, Now, epinephrine and nor-epinephrine may be thought as responsible to cause a change in the electrocardiogram after ejaculation.

Both epinephrine and nor-epinephrine increase remarkably the oxygen consumption of the cardiac muscle (2). There is almost general agreement that epinephrine and nor-epinephrine produce coronary vasodilation (1). Coronary blood flow is increased, possibly due to marked metabolic and dynamic changes which occur in the myocardium under catecholamine influence.

After ejaculation, in electrocardiogram, there was the increase in amplitude of QRS-complex, especially over the chest leads. The cause may be attributed to increase of myocardial contractility and excitability under the influence of liberated catecholamines.

Regarding the heart rate, after ejaculation, there was a decrease in heart rate, but blood pressure rose in all the subjects. This may be explained with the help of Marey's Law. If the arterial pressure is raised, the heart is allowed-this phenomenon is known as "Marey's Law".

Moreover, the cause of decreased frequency of heart rate might be related to the effect of increased level of nor-epinephrine in plasma after ejaculation. It is agreed both epinephrine and nor-epinephrine concentrations rise after ejaculation, but the rise in plasma concentration level in case of nor-epinephrine as it is more, probably its influence on the heart is expressed more. It was observed by Lepeschkin *et al.* (3) that infusion of nor-epinephrine caused a decrease of heart rate.

There was increase of T-wave amplitude after ejaculation. According to the work of Sjostrand (5), the voltage of the T-wave in a given person shows a linear inverse relation to the heart rate. Lepeschkin *et al.* (3) also reported, greatest rise of the T-wave when the slowing of the heart was greatest. The behavior of T-wave and heart rate in our study is correlating with their findings. It is probable the combined effect of epinephrine and nor-epinephrine on the cardiac muscle caused increase of depolarization as well as repolarization waves.

The St-segment after ejaculation was observed ascended to a little extent. The cause might be due to (i) associated rise along with the increase T-wave, and/or (ii) increased coronary circulation.

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