Cardiac Arrest Prediction by Using Brain Wave

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ABSTRACT

Sudden cardiac death (SCD) is a major cause of mortality secondary coronary artery disease (CAD) in modern societies. To avoid and create aware on that we are presenting a paper on idea about brain wave, brain and heart relation with this we can predict cardiac arrest. By this we can automatically operate defibrillator with setting a threshold value to avoid sudden cardiac death.

Keywords : Sudden Cardiac Death, Coronary Artery Disease, Energetic, Electromagnetic Field, Defibrillator, EEG

I. INTRODUCTION

Sudden cardiac arrest occurs and often without warning. It is triggered by an electrical malfunction in the heart that causes an irregular heart beat with its pumping action disturbed, the heart cannot pump blood to the brain, lungs and other organs. Few Seconds later, a person losses consciousness and has no pulse. Death occurs within a minute if the victim does not receive treatment.

In this paper we are going to present how the brain is related to heart and how to predict cardiac arrest by using EEG signal and how to avoid cardiac arrest by using cardioverter defibrillator.

HEART AND BRAIN COMMUNICATION:

Everything in human body is in central nervous system. The brain and individual parts of the body can communicate each other. In this way heart and brain is also be communicate. The heart actually sends more signals to the brain and vice versa. The heart and brain are in conduct two way dialog. The heart communicate with the brain and body in four ways.

1. Neurological communication (nervous system)
2. Biophysical communication (pulse wave)
3. Biochemical communication (hormones)
4. Energetic   communication (electromagnetic field)

MECHANISM FOR CARDIAC ARREST:

Human emotions can change heart signals and heart can respond complex ways. When human parts heart patient feeling stress or an angry as a trigger for sudden cardiac arrest andheart attack.
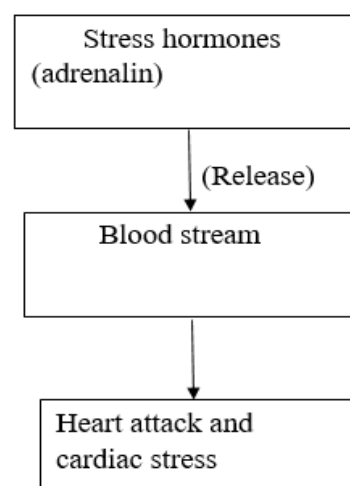
The stress hormones (high level) releases into a blood stream. This will be stops blood circulating to brain leads to death in medical terms. This is called as ventricular defibrillation.
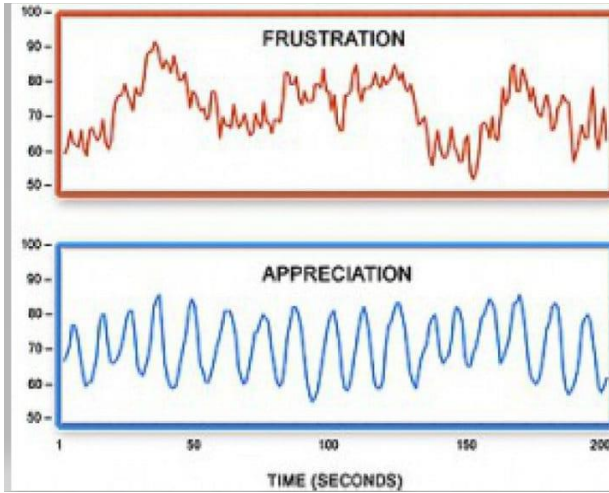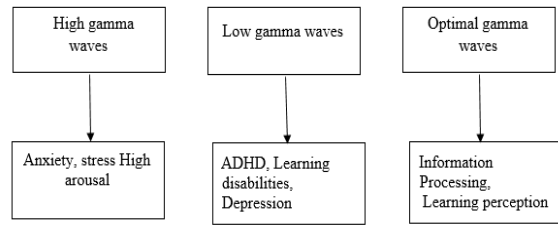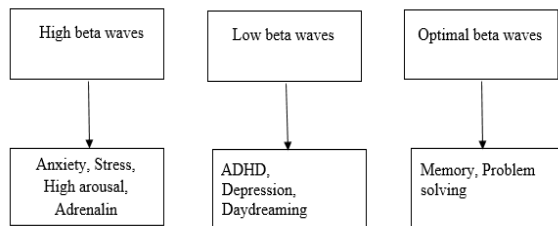

BRAIN WAVE AND ITS FUNCTIONS:

The human emotions can be predicted by using brain waves. The human possess a five different types of brain waves (electric patterns). It can be observed by EEG (Electro Encephalo Graph).

Brain waves are produced by electrical pulses from neurons communicating with each other. The five brain waves are the gamma, beta, alpha, theta, and delta. It can be measured in hertz. The brain waves are change according to the human action and their feelings.
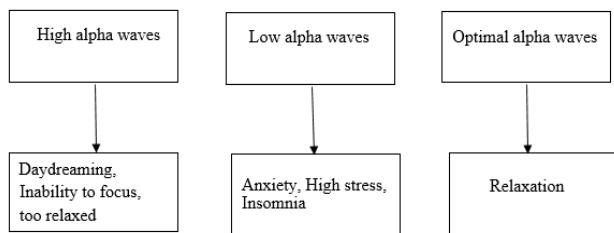
1. GAMMA WAVES (40-100 Hz)

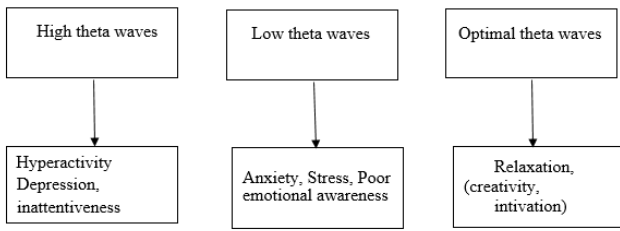

2. BETA WAVES(12-40 Hz)
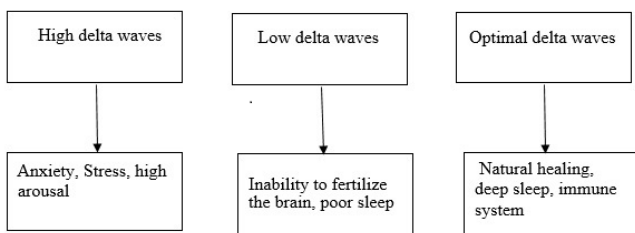

3. ALPHA WAVES (8-12 Hz)

4. THETA WAVES (4-8 Hz)

High theta waves	Low theta waves	Optimal theta waves
↓	↓	↓
Hyperactivity Depression, inattentiveness	Anxiety, Stress, Poor emotional awareness	Relaxation, (creativity, intivation)

5. DELTA WAVES (40-100 Hz)

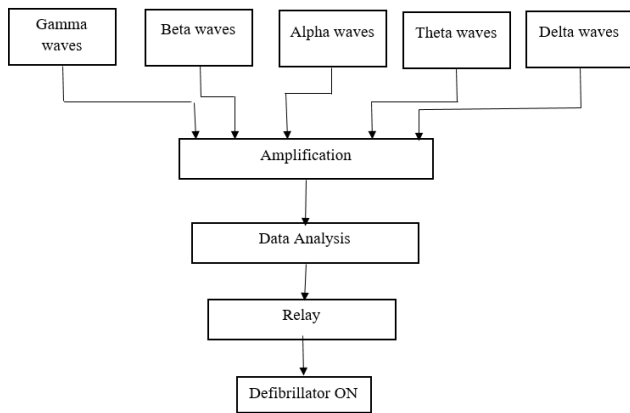| High delta waves	Low delta waves	Optimal delta waves
↓	↓	↓
Anxiety, Stress, high arousal	Inability to fertilize the brain, poor sleep	Natural healing, deep sleep, immune system

II. CONCLUSION

Through this brain waves we can observe electrical stimulation of brain in the form of (gamma, alpha, beta, theta, delta) the most of cardiac arrest occurs due to stress and depression. In brain waves we can easily interpretate that (high and low gamma, high and low alpha, high and low beta, high and low theta, high and low delta). And set threshold value when the changes occurs exceed the threshold. Then it will give to relay. And by this relay to cardioverter defibrillator. When changes exceeds threshold value is high and low the defibrillator is automatically ON and avoid sudden cardiac death.

III. REFERENCES

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