

Physiological and non-physiological EEG artifacts

N Sethi, P Sethi, J Torgovnick, E Arsura

Citation

N Sethi, P Sethi, J Torgovnick, E Arsura. *Physiological and non-physiological EEG artifacts*. The Internet Journal of Neuromonitoring. 2006 Volume 5 Number 2.

Abstract

Artifacts are signals recorded on the electroencephalogram that are not cerebral in origin and can be divided into physiological and non-physiological artifacts. Physiological artifacts are generated from the patient itself and include cardiac, glossokinetic, muscle, eye movement, respiratory and pulse artifact among many others. The EEG recording can be contaminated by numerous non-physiological artifacts generated from the immediate patient surroundings. Common non-physiological artifacts include those generated by monitoring devices, infusion pumps and suctioning devices though electrical devices like mobile phones may also contaminate the EEG record 1.

INTRODUCTION

Artifacts are signals recorded on the electroencephalogram that are not cerebral in origin and can be divided into physiological and non-physiological artifacts. Physiological artifacts are generated from the patient itself and include cardiac, glossokinetic, muscle, eye movement, respiratory and pulse artifact among many others. The EEG recording can be contaminated by numerous non-physiological artifacts generated from the immediate patient surroundings. Common non-physiological artifacts include those generated by monitoring devices, infusion pumps and suctioning devices though electrical devices like mobile phones may also contaminate the EEG record 1. During intracranial video EEG recording of a patient, intermittent high frequency highly sharply contoured waveforms lasting 2 seconds were visualized (Fig 1). Upon viewing the video image these sharply contoured waveforms were correctly identified as a non-physiological artifact generated by the telephone ringing in the patient's room. Figure 2 shows a sinusoidal non-physiological artifact generated by the patient's mechanical vibrating bed. This is best visualized in F4-C4 and C4-P4 channels. Also visualized in the same page is a prominent physiological cardiac (EKG) artifact in F7-T3 channel. Recognition of these physiological and non-physiological artifacts is important to avoid misinterpretation of the EEG and erroneous treatment decisions.

Figure 1

Figure 1: Intracranial EEG record shows a high frequency highly sharply contoured non-physiological artifact generated by a telephone ringing in the patient's room.



Figure 2

Figure 2: EEG record shows a non-physiological sinusoidal artifact best visualized in C4-P4 due to a vibrating mechanical bed. Also visualized in F7-T3 channel is a prominent physiological cardiac (EKG) artifact.



CORRESPONDENCE TO

Nitin Sethi, MD Comprehensive Epilepsy Center NYP-Weill
Cornell Medical Center 525 East, 68th Street New York, NY
10021 U.S.A. E-mail: sethinitinmd@hotmail.com

References

1. Sethi PK, Sethi NK, Torgovnick J. Mobile phone artifact. Clin Neurophysiol. 2006; 117(8):1876-8.

Author Information

N.K. Sethi, M.D.

Comprehensive Epilepsy Center, NYP-Weill Cornell Medical Center

P.K. Sethi, M.D.

Department of Neurology, Sir Ganga Ram Hospital

J. Torgovnick, M.D.

Department of Neurology, Saint Vincent's Hospital and Medical Centers

E. Arsura, M.D.

Department of Medicine, Saint Vincent's Hospital and Medical Center