

ABSTRAK

PENGARUH DURASI LAMANYA PAPAN ARUS LISTRIK TERHADAP GAMBARAN HISTOPATOLOGI CEREBRUM, CEREBELLUM, DAN BRAINSTEM

Rahman Suwardi¹, Wiryawan Manusubroto², Adeodatus Yuda Handaya²

¹Departemen Bedah, RSUP Dr. Sardjito, Fakultas Kedokteran Kesehatan Masyarakat dan Keperawatan, Universitas Gadjah Mada, Yogyakarta, Indonesia

²Divisi Bedah Digestif, Departemen Bedah, RSUP Dr. Sardjito, Fakultas Kedokteran Kesehatan Masyarakat dan Keperawatan, Universitas Gadjah Mada, Yogyakarta, Indonesia

Latar Belakang: Luka akibat arus listrik adalah kerusakan jaringan tubuh yang disebabkan oleh arus listrik yang melintasi tubuh. Paparan yang lebih berat sering menimbulkan 400 kematian per tahun. Derajat kerusakan akibat trauma listrik dipengaruhi jenis sirkuit, durasi kontak, tahanan, tegangan listrik, kuat arus listrik, dan sifat konduktor. Otak yang terdiri dari cerebrum, cerebellum, dan brainstem adalah organ yang dapat dilewati aliran listrik dan memiliki sifat konduktivitas. Untuk melihat kerusakan pada otak secara obyektif dapat dilakukan secara histopatologi.

Tujuan: Mengetahui perbedaan pengaruh durasi lamanya paparan arus listrik terhadap gambaran histopatologi cerebrum, cerebellum, dan brainstem

Metode: Penelitian ini dilakukan secara eksperimental dengan desain *post test only control design*. Penilaian kerusakan sel dilakukan dengan pemeriksaan secara histopatologi. Data kemudian dilakukan uji normalitas dan homogenitas, dilanjutkan dengan analisis bivariat dan multivariat.

Hasil: Dari tabel uji *post hoc test Bonferroni* didapatkan hasil $p < 0,000$ ($p < 0,05$) yang menunjukkan adanya perbedaan gambaran histopatologi otak pada kelompok kontrol, kelompok paparan 15 detik, serta kelompok paparan listrik 15 detik dan kelompok paparan listrik 45 detik.

Kesimpulan: Terdapat perbedaan pengaruh bermakna durasi lamanya paparan arus listrik terhadap gambaran histopatologi cerebrum, cerebellum, dan brainstem.

Kata kunci: Durasi, Paparan Arus Listrik, Histopatologi, Cerebrum, Cerebellum, Dan Brainstem

**THE EFFECT OF DURATION OF EXPOSURE TO ELECTRIC CURRENTS
ON HISTOPATHOLOGICAL DESCRIPTIONS OF THE CEREBRUM,
CEREBELLUM, AND BRAINSTEM**

Rahman Suwardi¹, Wiryawan Manusubroto², Adeodatus Yuda Handaya²

¹Department of Surgery, RSUP Dr. Sardjito, Faculty of Medicine, Public Health, and Nursing,
Universitas Gadjah Mada, Yogyakarta, Indonesia

²Digestive Surgery Division, Department of Surgery, RSUP Dr. Sardjito, Faculty of Medicine, Public
Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

Background: Injury due to electric current is damage to body tissues caused by electric currents passing through the body. Heavier exposure often results in 400 deaths per year. The degree of damage due to electrical trauma is influenced by the type of circuit, duration of contact, resistance, voltage, electric current, and conductor properties. The brain which consists of the cerebrum, cerebellum, and brainstem is an organ that can pass electricity and has conductivity properties. To see the damage to the brain objectively can be done histopathologically.

Aim: Knowing the difference in the effect of the duration of exposure to electric current on the histopathological features of the cerebrum, cerebellum, and brainstem

Method: This research was conducted experimentally with a post test only control design. Assessment of cell damage is done by histopathological examination. Data is then performed normality and homogeneity test, followed by bivariate and multivariate analysis.

Results: From the Bonferroni post hoc test table, the results of $p < 0.000$ ($p < 0.05$) showed that there were differences in brain histopathology in the control group, the 15-second exposure group, the 15-second electrical exposure group and the 45-second electrical exposure group.

Conclusion: There is a significant difference duration of exposure to electric current on histopathological features of the cerebrum, cerebellum, and brainstem.

Keywords: Duration, Exposure to Electric Current, Histopathology, Cerebrum, Cerebellum, And Brainstem