

Analisis indeks fungsional tibialis dan peronealis dan sudut pergelangan kaki sebagai parameter pemulihan setelah cedera akut nervus ischiadicus = Analysis of tibial and peroneal functional indices and ankle joint angle as the recovery level parameter after acute sciatic nerve injury nervus ischiadicus / Saadatur Rizqillah Pasaribu

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Abstrak

ABSTRAK

Nervus ischiadicus tikus umum digunakan sebagai model dalam evaluasi cedera dan regenerasi saraf perifer., yang menjadi nervus tibialis dan nervus peronealis. Penilaian pemulihan fungsi saraf setelah cedera, digunakan Sciatic functional index (SFI) untuk nervus ischiadicus, tibial functional index (TFI) untuk nervus tibialis dan peroneal functional index (PFI) untuk nervus peronealis. Sedangkan informasi mengenai kisaran gerak (ROM/range of motion) fleksi-ekstensi setiap sendi dari siklus berjalan dapat dianalisis dengan pengukuran sudut pergelangan kaki belakang.

Penelitian ini merupakan penelitian eksperimental analitik yang bertujuan mengetahui korelasi antara tingkat pemulihan nervus ischiadicus pasca cedera akut dengan TFI, PFI, dan sudut sendi pergelangan kaki belakang. Dua belas ekor tikus jantan Sprague Dawley dibagi menjadi kelompok cedera (nervus ischiadicus dipotong dan dijahit kembali; n=6) dan sham (n=6), diobservasi pemulihannya hingga hari ke-59 dengan jarak antar pemeriksaan tujuh hari. Pemulihan fungsi dinilai dengan melakukan analisis berjalan yang meliputi analisis jejak kaki dan sudut sendi dengan serial foto.

Hasil penelitian menunjukkan peningkatan pemulihan nervus ischiadicus diikuti dengan perbaikan nilai TFI dan PFI, dengan kecepatan perbaikan nilai PFI mendahului TFI. Analisis Spearman menunjukkan korelasi kuat antara tingkat pemulihan dengan TFI ($r=0,978$) dan PFI ($r=0.836$). Tingkat pemulihan juga berkorelasi dengan sudut pergelangan kaki, yaitu fase midstance (MSt; $r = 0.438$). Hasil penelitian ini menunjukkan bahwa pemulihan nervus ischiadicus akan diikuti dengan pemulihan cabang-cabangnya, dengan pemulihan cabang peroneal lebih cepat dibandingkan cabang tibial.

<hr><i>ABSTRACT</i>

The sciatic nerve (nervus ischiadicus) of rats is commonly used as the model in the evaluation of injury and peripheral nerves. This nerve branches into tibial nerve and peroneal nerve. In the assessment of nerve function recovery level post injury, Sciatic functional index (SFI) is used to analyze sciatic nerve, tibial functional index (TFI) is to assess tibial nerve, and peroneal functional index (PFI) is to examine peroneal nerve. The information on the ROM (range of motion) of the flexion and extension of each joint at each phase of the walking gait cycle can be analyzed by measuring the ankle joint angle of the hind foot.

This study is an analytical and experimental research aiming to discover the correlation between the recovery level of acute sciatic nerve injury and TFI, PFI, and the ankle joint angle of the hind foot. Twelve male Sprague dawley rats were divided into injury group (the sciatic nerve was cut and had end-to-end nerve

repair; n=6) and sham group (n=6); their recoveries were observed periodically until the 59th day with seven day distance between each examination. Functional recovery level was assessed by conducting walking gait analysis which included the analysis of footprints and ankle joint angle with a series of photos.

The results of the study showed that the increase in the recovery level of the sciatic nerve is followed by the improvement of TFI and PFI values, with the improvement of PFI value being faster than that of TFI value. Analysis using the Spearman test showed the strong correlation between recovery level and TFI ($r = 0,978$) and PFI ($r = 0.836$). Recovery level also correlates with ankle joint angle, which is at the midstance phase (MSt; $r = 0.438$). The study results pointed out that the recovery level of sciatic nerve will be followed by the recovery level of its branches, with peroneal branch recovering faster than tibial branch.