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MORTALITY AND FUNCTIONAL OUTCOME PREDICTORS IN COMBAT-RELATED PENETRATING BRAIN INJURY TREATMENT IN A SPECIALTY CIVILIAN MEDICAL INSTITUTION. OUR EXPERIENCE OF TREATMENT OF 121 WOUNDED PEOPLE

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Background: The combined use of new types of weapons and new types of personal protective equipment has led to changes in the occurrence, nature, and severity of penetrating brain wounds.
Methods: This was a prospective analysis of penetrating brain injury in patients who were admitted to Mechnikov Dnipropetrovsk Regional Clinical Hospital (MDRCH), Ukraine, from May 9, 2014 to December 31, 2017. All wounds were sustained during local armed conflict in Eastern Ukraine.
Overall, 47 (38.8%) patients were in a comatose state (GCS score of 3–8), and 9 (7.4%) patients had a terminal state. In 101 (83.5%) patients, wounds were caused by mine blast fragments, whereas wounds in 20 (16.5%) patients were caused by small-arm bullets. Penetrating wounds occurred in 14 (11.6%) patients and gutter wounds occurred in 5 (4.1%) patients. Nearly half of the patients (50.4%) were diagnosed with isolated wounds. Fifty-five (45.5%) patients were diagnosed with combined wounds.
Results: In total, 184 patients were identified with combat-related brain injury; of those, 121 patients with penetrating brain injury were included in our study. All patients were male soldiers with a mean age of 34.1 years (standard deviation [SD], 9.1). Mean admission Glasgow Coma Scale (GCS) score was 10 (SD, 4), and mean admission Injury Severity Score was 27.7 (SD, 7.6). Mortality within 1 month was 20.7%, and intracranial purulent-septic complications were diagnosed in 11.6% of the patients. Overall, 65.3% of the patients had favorable outcome (good recovery or moderate disability) based on GOS score at 12 months post-injury.
Conclusions: The following were predictors of mortality or poor functional outcome at 1 year post-injury: low GCS score on admission, gunshot wound to the head, dural venous sinuses wound, presence of intracerebral hematomas, intraventricular and subarachnoid hemorrhage accompanied by lateral or axial dislocation, and presence of intracranial purulent-septic complications.

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CRANIAL BONE SWAB CULTURES AND ASSOCIATED RISK OF SURGICAL SITE INFECTION IN PATIENTS WITH CRANIOTOMIES OR CRANIECTOMIES

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Background: Cranial bone swab cultures are often used in clinical practice to predict possible microbial contamination of bone flap at time of craniectomy or post-operative risk of surgical site infection (SSI). However, the clinical implications of positive bone swabs cultures are not well established. The objective of this study was to evaluate incidence of positive bone swab cultures after various neurosurgical procedures and assess subsequent risk of SSI.
Methods: We evaluated 141 consecutive patients who underwent craniotomy or craniectomy between January 2018 and August 2020. There were 50 craniotomies and 91 craniectomies. Bone swabs were taken during surgery and processed using standard microbiological techniques. We assessed incidence of postoperative SSI, and incidence of culture positive bone swab cultures in all patients and in three subgroups (emergency decompressive craniectomy, emergency craniotomy and elective surgery craniotomy).
Results: Overall, the cranial bone swabs cultures were positive in 24 out of 141 cases (17%). The most common organism was Cutibacterium acnes (75%). Out of 24 patients with positive cultures, none had SSI, and out of 117 patients with negative cultures, 3 had SSI. The differences were not statistically significant. Incidence of positive bone swab cultures was higher in group of patients who underwent decompressive craniectomy (19%) in comparison to elective surgeries (13,1%) and emergency procedures (8%). However, the differences were not statistically significant (p=0.55).
Conclusion: In our study, cranial bone swabs cultures after neurosurgical procedures were positive in approximately 17% of the cases, and were not related to the type of surgery (craniotomy or craniectomy), emergency or nonemergency surgery. Also, positive bone swabs were not related to postoperative SSI. Our results do not support routine use of cranial bone swabs after craniotomy or craniectomy for prediction of postoperative SSI.

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WHAT IS THE INCIDENCE OF POST-TRAUMATIC HYDROCEPHALUS IN TRAUMATIC BRAIN INJURY PATIENTS THAT UNDERWENT DC VERSUS THOSE THAT WERE MANAGED CONSERVATIVELY: LESSONS FROM A META-ANALYSIS

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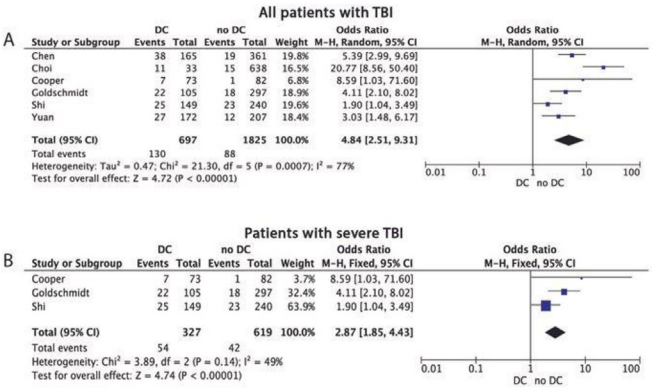
Background: There is an ongoing debate whether Decompressive Craniectomy (DC) serves as an independent risk factor for the development of Post-traumatic Hydrocephalus (PTH). The aim of this systematic review and meta-analysis was to compare the incidence of PTH in TBI patients that underwent DC versus those that were managed conservatively.
Methods: The scientific literature was systematically reviewed to identify studies with specific inclusion criteria: (1) Randomized Controlled Trials and observational studies with more than 10 patients in each study arm, (2) comparing the incidence of PTH, (3) in patients aged ≥15 years old, (4) that either underwent DC or received conservative/non-surgical treatment (no DC). (5) Only studies with English full texts were included and (6) no restrictions were applied on publication date. The pooled Odds Ratio (OR) and Confidence Interval (CI) were calculated. The quality of the included studies was assessed using the MINORS tool.
Results: Evidence from six articles was synthesized, incorporating data from 2522 patients. A statistically significant higher occurrence of PTH [OR (95% CI): 4.84 (2.51, 9.31); Pz <0.00001] was identified in patients that underwent DC for TBI when compared to those that were managed conservatively. The same was true when only patients with severe TBI were included in the analysis [OR (95% CI): 2.87 (1.85, 4.43); Pz <0.00001].
Conclusion: DC might serve as a risk factor for the development of PTH. Further prospective studies, providing high-quality evidence, are needed to definitively establish any causative relationship between DC and PTH development.



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FACTORS ASSOCIATED WITH MORBIDITY AND MORTALITY OUTCOMES FOLLOWING FIRST CRANIOPLASTY

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