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INPLASY

Massive Hemothorax resulting from Blunt Vertebral Fracture

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ADMINISTRATIVE INFORMATION

Support - Nil.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 5 April 2025 and was last updated on 5 April 2025.

INTRODUCTION

Review question / Objective Comprehensive data on demographics, clinical presentations, diagnostic tools, hospital stay, and outcomes related to massive hemothorax caused by blunt vertebral fractures are lacking.

Rationale In hemothorax, bleeding may originate from adjacent structures, including the lung parenchyma, pleura, thoracic great vessels, heart, diaphragm, fractured ribs, and fractured sternum. Although the thoracic and lumbar spine are anatomically adjacent to the pleura, a vertebral fracture is a rare cause of hemothorax. A retrospective study in Japan reported an incidence rate of 6.9% for massive hemothorax due to unstable thoracic vertebral fractures.

Condition being studied We hope that the collected data will assist emergency physicians and trauma surgeons in diagnosing and managing massive hemothorax resulting from blunt vertebral fractures.

METHODS

Search strategy The search will be performed by using the search Terms (“Hemothorax"[Mesh]) AND ("Thoracic vertebrae" [Mesh] OR "Lumbar vertebrae"[Mesh]).

Participant or population Patients with massive blunt traumatic hemothroax.

Intervention Blunt vertebral fracture.

Comparator Not applicable.

Study designs to be included Case series and case report.

Eligibility criteria Inclusion: patient with massive hemothorax resulting from blunt vertebral fractures.

Exclusion: patients with penetrating injuries or cases in which the source of hemothorax could not be identified.

Information sources
1. PubMed and Google Scholar
2. References of potentially included studies are screened for additional articles.

Main outcome(s) Demographics, clinical presentations, diagnostic tools, hospital stay, and outcomes related to massive hemothorax caused by blunt vertebral fractures.

Additional outcome(s) Differences between two groups according to the source of hemothorax.

Data management Data extraction includes the first author, year, age, sex, nation, mechanisms of trauma, associated injuries, mortality, methods to control bleeding, management for vertebral fracture, time to spinal fixation, and preexisting spinal abnormality.

Quality assessment / Risk of bias analysis Not applicable.

Strategy of data synthesis We use Excel (Microsoft Office 2011, Microsoft) to manage studies found.

Subgroup analysis We divided the included patients into two groups according to the source of hemothorax.
Group 1, in which bleeding originated directly from fractured vertebrae.
Group 2, in which bleeding originated from the arteries associated with vertebral fractures.

Sensitivity analysis No sensitivity analysis.

Language restriction No language limitation.

Country(ies) involved Taiwan.

Keywords hemothorax; vertebral fracture; thoracolumbar junction; thoracotomy; transarterial embolization; older.

Dissemination plans We plan to merge the collected data from this systemic review with the results of two unpublished cases. Then we write a paper andpublish the article.

Contributions of each author
Author 1 - Kuo-Chang Lee - Author 1 conducted searching and identifying possible included articles. He also reviewed included articles and collected data.
Email: iamgord@hotmail.com
Author 2 - Li-Chin Cheng - Author 2 analyzed the collected data and resolved the disagreement between author 1 and 2. He also refined the original article to final manuscript.
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Author 3 - Kuo-Tai Chen - Author 3 reviewed included article, collected and tabulated data, and wrote original article.
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