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REVIEW

Characteristics of patients with myelomatous pleural effusion. A systematic review☆

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Abstract
Background: Myelomatous pleural effusion (MPE) is rare in multiple myeloma, and therefore its characteristics are not well defined.
Methods: A systematic review (4 online databases) was conducted of articles describing the clinical characteristics of patients with MPE, pleural effusion's biochemical characteristics and treatment efficacy. We analyzed isolated cases and small retrospective series.
Results: We included 98 articles with a total of 153 patients with MPE. The median age was 62 years, and the ratio of males to females was 1.7:1. The most common symptoms were dyspnea (98.8%), bone pain (100%) and chest pain (95.3%), and the most relevant abnormal laboratory test results were anemia (90.1%) and renal failure (53.8%). MPE was predominantly unilateral (63.9%) and covered more than two-thirds of the hemithorax (54.5%). The pleural fluid (PF) had a haematologic/serohaematologic appearance (87%) and met the criteria for lymphocytic (78.6%) exudate (94.7%). The most cost-effective diagnostic procedures were pleural cytology (95.9%) and the observation of a monoclonal peak in the PF (94.7%). In a significant proportion of patients (54.7%), the MPE did not respond to treatment, and the best response was achieved when chemotherapy (with/without corticosteroids) was combined with therapeutic thoracentesis, chest drainage or pleurodesis.
Conclusions: MPE predominates in middle to older age men, is symptomatic and is usually unilateral. PF is an exudate with a hemorrhagic appearance, and the most cost-effective diagnostic procedure is pleural cytology. Treatment response is unfavorable in more than half of patients.

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PALABRAS CLAVE
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Biopsia pleural;
Revisión sistemática

Características de los pacientes con derrame pleural mielomatoso. Revisión sistemática

Resumen
Introducción: El derrame pleural mielomatoso (DPM) es raro en el mieloma múltiple, por lo que sus características no están bien definidas.
Métodos: Revisión sistemática (cuatro bases de datos electrónicas) de los artículos que describen las características clínicas de estos pacientes, las características bioquímicas del derrame pleural y la eficacia de los tratamientos instaurados. Se analizaron casos aislados y pequeñas series retrospectivas.
Resultados: Se incluyeron 98 artículos con un total de 153 pacientes con DPM. La mediana de edad fue de 62 años y la razón hombre/mujer, de 1,7/1. La sintomatología más frecuente consistió en disnea (98,8%), dolor óseo (100%) y dolor torácico (95,3%); las alteraciones analíticas más relevantes fueron la anemia (90,1%) y la insuficiencia renal (53,8%). El DPM fue predominantemente unilateral (63,9%) y mayor de 2/3 del hemitórax (54,5%). El líquido pleural (LP) tuvo aspecto hemático/serohemático (87%) y cumplió criterios de exudado (94,7%) linfocitario (78,6%). Los procedimientos diagnósticos más rentables fueron la citología pleural (95,9%) y la observación en el LP de un pico monoclonal (94,7%). En una proporción significativa de pacientes (54,7%) el DPM no respondió al tratamiento y la mejor respuesta se obtuvo cuando la quimioterapia (con/sin corticoesteroides) se asoció a toracocentesis terapéuticas, drenaje torácico o pleurodesis.
Conclusiones: El DPM predomina en varones de edad media/alta, es sintomático y suele ser unilateral. El LP es un exudado de aspecto hemorrágico y el procedimiento diagnóstico más rentable es la citología pleural. La respuesta al tratamiento no es favorable en más de la mitad de los pacientes.

Background

Multiple myeloma (MM) is a hematologic malignancy characterized by the clonal proliferation of malignant plasma cells in the bone marrow, with subsequent spreading to other locations, including the chest.[1] These neoplastic plasma cells are characterized by the abnormal production of monoclonal proteins, which can be detected in blood, urine and organs (where they can cause damage).

Pleural effusion (PE) is present in approximately 6% of patients with MM,[2] can have varying etiologies and is divided into 2 groups: nonmyelomatous and myelomatous pleural effusion (MPE). MPE is present in only 1% of cases,[3] and its diagnostic criteria are as follows: (1) detection of atypical plasma cells in the pleural fluid (PF), (2) pleural biopsy compatible with malignancy or (3) demonstration of monoclonal proteins in the PF through electrophoresis. The most common causes of nonmyelomatous effusions are heart failure, nephrotic syndrome, infections, pulmonary thromboembolism and amyloidosis. Although there are various treatments for MPE (chemotherapy, therapeutic thoracentesis, placement of chest drainage and pleurodesis), there is no consensus on how to handle these patients.

There are no sufficiently large series in the literature that describe the characteristics of patients with MPE or their treatment. The objective of this systematic review is to document the characteristics of patient with MPE, the biochemical characteristics of PF and the most effective treatment for these patients.

Material and methods

In this systematic review, we used the methodology based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) system.[4] Due to the lack of sufficiently large series that met the study objectives, we used the sum of the cases described in the literature.

Selection criteria

All cases of MPE of any age published under any format were considered eligible for inclusion, except those corresponding to abstracts of congresses and editorials, reviews or letters to the editor that did not document a new case.

Information sources

The literature search included the following electronic databases (online): Medline (through Pubmed interface), Embase, Scopus and Web of Science. The searches in the various databases were conducted between July 1, 2016 and December 31, 2016. The terms used for the database searches were ''multiple myeloma'' and ''pleural effusion''. We selected articles in English or Spanish only.

In addition to the electronic databases, we conducted a manual search of the references included in the selected articles. The articles were reviewed in 3 stages, according to