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Original Research Article

A CLINICAL STUDY OF MALIGNANT MESOTHELIOMA

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Abstract

Background: Malignant Mesothelioma (MM) is a rare but rapidly fatal and aggressive tumor of the pleura and peritoneum with limited knowledge of its natural history.

Methods: 100 patients with histopathological MM diagnosis were included. The data obtained from patient files were recorded on standard forms, prepared in advance. Age, gender, hometown, residence, asbestos usage history, latent period between asbestos exposure and diagnosis, symptoms, symptom duration, diagnosis date, diagnostic method, localization, histopathological type, routine laboratory results, stage, karnofsky performance score (KPS), treatment regimen, pleurodesis, treatment response, date of death and survival times of patients were all recorded on the forms.

Results: The mean age of patients 52.31±12.36 Yrs. 62 patients were male and 38 female. Environmental asbestos exposure was determined in 75.00% of patients At diagnosis, 76.00% patients had dyspnea; 71.00% weight loss; and 64.00% chest pain. A total of 48.00% patients were smokers. Mean survival time was found to be 9.3 months in our study.

Conclusion: MM related to asbestos exposure is seen frequently in Southern Rajastan. Patients present with the typical clinical features of dyspnea, weight loss, and chest pain.

Keywords: MM, Absestos, Dyspnea.

Introduction

Malignant Mesothelioma (MM) is a rare but rapidly fatal and aggressive tumor of the pleura and peritoneum with limited knowledge of its natural history. The earliest mention of a possible tumor of the chest wall (the pleura) was made in 1767 by Joseph Lieutaud, the founder of pathologic anatomy in France in study of 3,000 autopsies where he found two cases of "pleural tumors." In 1819, René-Théophile-Hyacinthe Laennec, the French physician based upon his understanding of the nature of pleural cells, suggested the origin from the pleura. Peritoneal mesothelioma was first described in 1908 by Miller and Wynn.[1,2] The incidence has increased in the past two decades but still it is a rare tumour.[1,3] The disease incidence varies geographically i.e., from less than 1 per 1,000,000 in Tunisia and Morocco, to the highest rate in Britain, Australia and Belgium i.e. 30 per 1,000,000 per year.[3] Currently, the incidence ranges from about 7 to 40 per 1,000,000 in industrialized Western nations, depending upon the amount of asbestos exposure in the past several decades.[4]

The most common complaints of patients with MM are dyspnea and chest pain. Dyspnea occurs through an accumulation of pleural fluid or restriction caused by thickened pleura. Pain is often expansive and obtuse on the lateral wall of the chest, generally chronic, persistent, and nonpleuretic.[5]

Survival rates of MM are poor because there is no curative therapy. Mean survival has been reported as about 6-12 months in many patient series. Treatments in use are surgery, chemotherapy, and radiotherapy. In recent years, multimodality treatment regimens have been reported as prolonging survival.[6]

We aimed to investigate clinical profile and treatment outcomes of MM cases

Material and methods:

Type of study: Retrospective study.

Sample size- All 100 patients with histopathological MM diagnosis were included.

The data obtained from patient files were recorded on standard forms, prepared in advance. Age, gender, hometown, residence, asbestos usage history, latent period between asbestos exposure and diagnosis, symptoms, symptom duration, diagnosis date, diagnostic method, localization, histopathological type, routine laboratory results, stage, karnofsky performance score (KPS), treatment regimen, pleurodesis, treatment response, date of death and survival times of patients were all recorded on the forms. Survival time is defined as the time between diagnosis and death, or end of the study time if the patient was then still alive.

The period between the first complaint and diagnosis was registered as symptom duration, and that between first asbestos exposure and diagnosis as latent period. The primary incurred serous membranes were classified as

pleura, peritoneum, pericardium and others (eg, tunica vaginalis). Diagnostic methods were classified as either Closed Pleural Biopsy with Ramel Needle and Surgical Biopsy. Hemotoxylin and eosin staining was used as standard in histopathological evaluation. Histological investigation was used on surgical and/or necropsy material and proven MM patients were included. Histochemical or immunohistochemical staining were used if necessary. Diagnosis and subtype assessment were carried out with differential immunohistochemical staining in some cases in whom, hemotoxylin and eosin staining could not be done. Staging studies were made after histopathological diagnosis and included thorax, abdominal and cerebral tomography, and Technetium (Tc)-99 bone scintigraphy. One chest physician and two radiology physicians evaluated radiological data. Because some patients did not accept thoracoscopy, the Butchart staging system was used, as it is applicable to all patients[7]

Treatment regimens were divided into three groups: Best supportive care (BSC), chemotherapy, and multimodality treatment. The multimodality treatment regimen was administered as adjuvant chemoradiotherapy after extrapleural pneumonectomy.[8]

A modified response evaluation criteria in solid tumors (RECIST) technique was used to evaluate the treatment response of patients undergoing chemotherapy.[9] Baseline values were calculated by taking total long diameters of measurable lesions, adding them and comparing the result with baseline values after chemotherapy. Results were recorded as follows:

- Complete response (CR): Disappearance of all target lesions with no evidence of tumor elsewhere
- Partial response (PR): Reduction of at least 30% in the total tumor measurement (sum of six unidimensional measurements, acquired in two positions at three separate levels on transverse cuts of CT scan)
- Progressive disease (PD): Increase of at least 20% in the total tumor measurement
- Stable response (SR): Disease meeting the criteria of neither PR nor PD

Data Analysis:

Data was recorded as per Performa. The data analysis was computer based; SPSS-22 was used for analysis. For categoric variables chi-square test was used. For continuous variables independent samples's *t*-test was used. *p*-value <0.05 was considered as significant.

Results

Table 1: Basic charactersyic of patients

Characteristics		No of cases(n=100)
Mean age		52.31±12.36 Yrs
Male : Female		62 : 38
Asbestos exposure		75(75.00%)
Clinical profile	Dyspnea	77(77.00%)
	Weight loss	71(71.00%)
	Chest pain	64(64.00%)
Smoking history		48(48.00%)
Presence of pleural fluid		95(95.00%)
Primary involvement	Pleura	92(92.00%)
	Pericardium	1(1.00%)
	Peritoneum	7(7.00%)
Histo-pathological type	Epithelial	67(67.00%)
	Sarcomatous	4(4.00%)
	Mix	4(4.00%)
	Undefined	25(25.00%)
Stage	1-2	71(71.00%)
	3-4	29(29.00%)
Mean survival time	9.75 months	

Table 2: Treatment response

Response	CG1 Or CG 2	CP 1 Or CP 2	Cisplatin + Docetaksel
Complete response	2	7	
Partial response	7	24	
Stable response	8	27	1
Progression	2	3	

CG 1=Cisplatin + Gemcitabine, CG 2= Gemcitabine + Carboplatin
CP1= Pemetrexed + Cisplatin, CP 2 =Carboplatin + Pemetrexe

Discussion

The etiological relationship of mesothelioma with asbestos was first identified in 1960, and the first studies into the disease in Turkey was undertaken in the early 1970s.[10] MM is a rare tumor in the normal population, only 10-22/100,000 in a year for societies in which asbestos or mineral fiber contact has never been reported is between[11]

Exposure is higher for men in industrialized countries because most of them work in the asbestos industry, or in industries that use asbestos. Because men and women share the same lifestyle in rural areas, the share of the risk is equal too, and the male/female ratio is approximately one in related patient series.[12,13] Although the men mine and carry asbestos in our region, the disease affects women just as seriously because they process asbestos with water and get exposed via inhalation. Some studies in our region have found male/female ratios as close as 1.3:1.[12] In our study, this ratio is 1.63:1.

Environmental asbestos exposure starts at birth in rural areas, and our country series shows a latent period of 50-55 years, longer than the workplace series, but with a younger diagnosis age[4]. At 46-52%, the epithelial subtype was reported as the most frequent subtype in the series, with the mixed subtype (21-26%) in second place[12,13] We also found that epithelial was the subtype most frequently detected.

MM has a poor prognosis no matter what treatment regimen is attempted. Earlier studies determined average survival time as 6-12 months. Mean survival time was found to be 9.3 months in our study.

Multimodality treatment regimen might be useful in cases at an early stage, as it offers a significantly longer survival time than other treatment regimens.

Conclusion

MM related to asbestos exposure is seen frequently in Southern Rajastan. Patients present with the typical clinical features of dyspnea, weight loss, and chest pain.

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