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Investigative Research on Mesothelioma Caused by Asbestos Exposure in Japan

— Clinical Picture Based on 221 Cases from the Rosai Hospital Group —

Field name "Asbestos related diseases"

In June 2005, asbestos exposure became a large social problem. In this field we immediately began investigations on the patients diagnosed with mesothelioma in the 27 Rosai hospitals countrywide. Based on the 221 cases of pleura, peritoneum, pericardium, and tunica vaginalis testis mesothelioma, we clarified the clinical picture in our country [1, 2, 3, 4].

We investigate the occupational histories of the admitted patients and to the extent that we investigated regarding the possibility of occupational exposure to asbestos in these cases, we found the exposure rate of 84.1% to asbestos, which is the same level as that in Europe and the US (Table 15). In the Rosai hospitals, the practice of investigating the occupational history helped in calculating the rate of occupational exposure to asbestos in the cases of mesothelioma in our country.

Furthermore, although we found that radical operation based on early diagnosis had the best prognosis, there was a problem in that the detection rate in Stage I and Stage II where radical operation was possible was a low 29.6%, and in approximately 70% of the cases mesothelioma was found too late for radical surgery (Fig. 41).

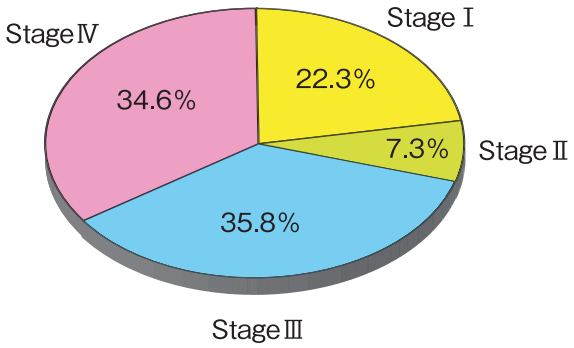

Fig. 41 Classification of cases of pleural mesothelioma in Japan at time of detection

In order to deal with this problem, we published a diagnosis guide to aid in early detection so that doctors on the frontlines can become familiar with asbestos related diseases [5]. To date we published 14,000 copies, and promoted the diffusion of fundamental knowledge that was indispensable to diagnosing asbestos associated diseases. Furthermore, we compiled early detection cases (Fig. 42) and published the "Guide to early detection and diagnosis of asbestos associated diseases" [6] and published the "Handbook for diagnosing pleural mesothelioma" [7] targeting pulmonologists and pulmonary surgeons.

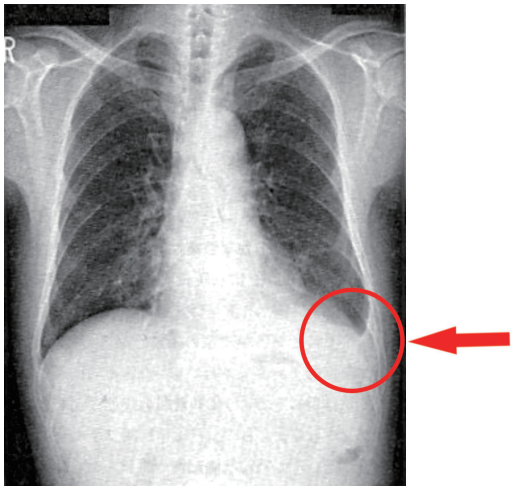

Fig. 42 Some pleural effusions detected in the left lung at the time pleural mesothelioma was detected at Stage I.

Furthermore, in order to establish an early diagnosis method for mesothelioma, we noted the methylation of the cancer suppressor gene in pleural effusion. Based on the results of copious research, we developed an early diagnosis method that can differentiate mesothelioma and benign asbestos pleural effusion caused by asbestos exposure from lung cancer (adenocarcinoma) and tuberculous pleurisy [11].

In this case, we also clarified that the latency period for the onset of mesothelioma due to asbestos exposure was approximately 40 years (Table 16).

Also, following mesothelioma, we determined the clinical picture in our country for lung cancer due to asbestos exposure [8, 9] and benign asbestos pleural effusion [10].

If we investigate the change in the amount of asbestos imported into Japan, we find that the peak was between 1970 to 1990. This indicates that after 40 years from 2010 to 2030, there is the probability that the number of incidences of mesothelioma due to asbestos exposure will increase. In Japan, improving the early detection rate and increasing the survival rate for the increasing number of patients with mesothelioma are large research topics that we must overcome.

Table 15. Frequency Based on Occupation of Suspected Cases of Occupational Exposure to Asbestos

		Pleural Mesothelioma	Peritoneal Mesothelioma	Total
Number of cases where research was conducted on occupational history		171	24	201*
Type of occupation with suspected occupational asbestos exposure	Shipyard work	34	3	37
	Construction	20	2	22
	Insulation work	12	4	19*
	Plumbing	15	0	15
	Asbestos product manufacturing industry	10	5	15
	Electrician	12	1	13
	Mechanic appliance manufacturing industry	10	0	11*
	Driver	6	1	7
	Vehicle manufacturing industry	5	0	5
	Demolition work	4	1	5
	Warehouse work	4	0	4
	Car manufacture/ repair work	3	0	3
	Sheet metal work	3	0	3
	Other asbestos-related work	8	2	10
	Total	146 (85.4%)	19 (79.2%)	169 (84.1%)

* Includes four cases of pericardium mesothelioma and two cases of tunica vaginalis testis

Table 16. Latency Period Until Episode of Mesothelioma

	Pleural Mesothelioma	Peritoneal Mesothelioma	Total*
Latency Period (Years)	42.6 ± 9.5 (n=143)	43.4 ± 8.8 (n=17)	42.5 ± 9.5 (n=162)

(Average ± SD) *Includes one case each of tunica vaginalis testis and mesothelioma of an unidentified site.

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* Reference 4 can be viewed at **http://www.research12.jp/h13/index2.html**, a site dedicated to the research and development, and dissemination projects related to the 13 fields of occupational injuries and illnesses.
* References 3, 9, and 10 can be viewed at **http://www.research12.jp/h13/index.html**, a site dedicated to the research and development, and dissemination projects related to the 13 fields of occupational injuries and illnesses.