Enzo Merler[1,2], Rosanna Bizzotto[3], Roberto Calisti[4], Domenica Cavone[5], Nicoletta De Marzo[6], Francesco Gioffrè[2], Tommy Mabilia[7], Daniela Marcolina[8], Marina Musti[5], Maria Giovanna Munafò[9], Sara Roberti[2], Paola Zambon[10]

[1] *Venetian Mesothelioma Registry, Padua*
[2] *Occupational Health Unit, Department of Prevention, Padua*
[3] *Occupational Health Unit, Department of Prevention, Camposampiero, Padua*
[4] *Occupational Health Unit, Department of Prevention, Civitanova Marche, Macerata*
[5] *Regional Mesothelioma Registry, Department of Internal Medicine, University of Bari*
[6] *Occupational Health Unit, Department of Prevention, Feltre, Belluno*
[7] *Occupational Health Unit, Department of Prevention, Bassano del Grappa, Vicenza*
[8] *Occupational Health Unit, Department of Prevention, Belluno*
[9] *Occupational Health Unit, ASL 5, Palmanova, Udine*
[10] *Department of Oncology, University of Padua,Venetian Tumour Registry, Padua*

Mesotheliomas among Italians, returned to the home country, who worked when migrant at a cement-asbestos factory in Switzerland

Summary

Objectives: To report the occurrence of mesotheliomas in Italy among subjects who worked, when migrant, at a cement-asbestos factory in Niederurnen, Switzerland, and had resettled to the home country.

Methods: Information about the disease and on the working history of subjects was collected by regional mesothelioma registries. Only cases diagnosed by means of histo-pathological examinations have been considered here.

Results: 15 mesotheliomas (13 pleural, 2 perithoneal; 12 among males, 3 among females) have been identified among Italians, who had worked at the factory. None of them had other occupational exposure to asbestos. The majority was living in the Veneto Region (North East of Italy), and in Puglia (Southern Italy).

Conclusions: Exposure to asbestos at this factory has already caused an important number of occupational cancers among the employees, a large fraction being constituted of migrants. In order to avoid under-estimation of risks and to allow compensation, diseases which occur among foreign workers returned to their home country should be evaluated. Migration for work is at the genesis of asbestos-related mesotheliomas now occurring in Italy.

Keywords: Asbestos – Cancer – Respiratory diseases – Migration – Returned migrants – Mesothelioma registries.

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Following the implementation of the European Directive 83/477, a network of regional Registries of Mesothelioma has been set up in Italy, which aims to identify new cases which occur in the general population and to investigate possible exposure to risk factors, especially asbestos. There are registries independent parts working towards shared goals and reporting the results to the National Institute of Occupational Safety and Prevention (ISPESL). Diagnostic protocols have been drafted to permit, whenever possible, the standardised diagnosis of mesothelioma. Patient's history is investigated in accordance with a specific protocol comprising the compilation of a standard questionnaire, through direct interviews with the patient or indirect interview with a relative (Chellini et al. 1996). Regional mesothelioma registries are now active in Piemonte, Liguria, Lombardy, Emilia-Romagna, Tuscany, Puglia, Marche, Sicily (Nesti et al. 2001). Last year, a Mesothelioma Registry was established also in the Venetian region, North East of Italy. This Registry is searching for the cases occurred since 1987 among the residents of that region it has been observed that some subjects had worked at a certain cement-asbestos factory in Switzerland (Merler et al. 2001a; 2001b). Therefore, we asked for additional information to the Swiss Insurance Institute (SUVA) and to other regional mesothelioma registries of Italy, in order to widen the search to find whether there were other cases of mesothelioma who had worked in this factory and had returned to the home country. We have already documented that asbestos exposure has been at the genesis of mesothelioma cases detected in Italy

among subjects who, as migrants, worked or lived near the crocidolite mine of Wittenoom Gorge, Western Australia (Merler et al. 1999; 2000), and the new cluster reinforced our opinion that asbestos exposure abroad has been a risk factor for mesothelioma now occurring in the Italian general population.

Materials and methods

We combined the information about mesotheliomas cases detected in Italy, diagnosed by means of histo-pathological examinations, occurring among Italian residents who had worked at the cement-asbestos factory ETERNIT AG, located at Niederurnen, Switzerland.

Information about the disease is based on retrieval of clinical records. The entire working history of subjects was collected from several sources: face-to-face interviews with living subjects; interviews with relatives of subjects already deceased; written documentation, such us declarations from the factory or from the Swiss Insurance Institute, made in order to obtain compensation.

The probability of occupational or non occupational exposure to asbestos in the history of subjects has been evaluated according to the guidelines of the National Mesothelioma Registry (Chellini et al. 1996): the likelihood of occupational exposures has been categorised, when positive, into: certain, probable, possible, on the basis of the industrial sector the subject worked in, on job and task performed, on documentary data regarding the use of asbestos or asbestos products in each working period. Exposure is defined as absent or not probable, when there is no evidence of the use of asbestos or asbestos products during a period of work at a factory, and when the industrial production concerned is not known for use of asbestos or asbestos products.

Results

We identified 15 subjects who worked as migrant labour at the ETERNIT AG factory in Niederurnen, Switzerland, had returned to Italy, and who became affected by a mesothelioma. Table 1 presents the main characteristics of each subject. Three subjects were women.

As already stated, the subjects have been identified because of information from the SUVA and subsequent inquiries by the local Occupational Health Unit of the National Health Service, or/and through a search from the records of the following Regional mesothelioma Registries (in brackets, number of mesothelioma cases with exhaustive of data on occupational and residential history): Liguria (248 cases); Emilia-Romagna (217 cases), Tuscany (418 cases), Puglia (251 cases).

The disease was diagnosed in the period between 1984 and 2000. Diagnosis was always ascertained by means of a histological examination. The age at the disease was 58.9 ± 7.9 years. Thirteen subjects had a pleural mesothelioma, two had a peritoneal mesothelioma. Mesothelioma subtypes included eight epithelial, four biphasic, two sarcomatous and one desmoplastic. All subjects died for the disease.

The majority of subjects worked at the ETERNIT AG factory for several years, few for a short period. Most of the migrants affected by the disease had started work in the factory between 1950 and 1960, but some subjects were taken on after 1960 and one in 1970.

Table 1 General characteristcs of mesothelioma cases among Italian migrants, returned home, who had worked at a cement-asbestos factory in Switzerland (ordered by year of diagnosis)

Sex	Year of diagnosis	Year of birth	Region of residence	Period of work at the factory	Syte and histological subtype	Main tasks performed
M	1984	1937	Veneto	1956–1966	Pleural, epithelial	Mixing cement and asbestos
M	1985	1939	Veneto	1959–1961	Pleural, epithelial	Pipes productiom
F	1987	1926	Veneto	1953–1971	Pleural, sarcomatous	Production
F	1988	1930	Veneto	1956–1960	Pleural, epithelial	Moulding and finishing
M	1988	1933	Veneto	1956–1983	Pleural, epithelial	Finishing
M	1988	1926	Veneto	1957–1967	Pleural, biphasic	Finishing
M	1991	1936	Puglia	1959–1990	Pleural, biphasic	Mixing and pipes production
M	1992	1936	Piemonte	1963–1966	Pleural, epithelial	Pipes production
M	1994	1926	Veneto	1956–1968	Pleural, biphasic	Pipes production and finishing
M	1995	1952	Puglia	1970–1982	Pleural, desmoplastic	Finishing
M	1996	1946	Puglia	1966–1982	Pleural, epithelial	Pipes production and cutting
M	1997	1935	Abruzzo	1961–1971	Peritoneal, epithelial	Production
M	1999	1944	Veneto	1967–1972	Pleural, epithelial	Cutting
F	1999	1927	Veneto	1954–1960	Peritoneal, biphasic	Finishing
M	2000	1939	Friuli	1964–1965	Pleural, sarcomatous	Cutting

Subjects performed different jobs, but were employed in dusty tasks, such as mixing cement and asbestos, finishing and cutting. Often the subjects lived in houses provided by the factory, located at a short distance from the factory.

Apart from this period in the cement-asbestos factory, no further periods of exposure to asbestos at work could be identified in the working history of any subject.

Latency, time in years passed from the beginning of exposure to disease onset, was 32.8 ± 4.9 years.

After a period of employment in Switzerland, all subjects had returned home to the same community they had come from. The 15 subjects were from several Italian Regions, but clustered in the Venetian Region (9 cases) and in Puglia (3 cases). Clusters of cases occurred among the inhabitants from the same town or from the same small areas: four cases from Bassano del Grappa or the nearby area (Province of Vicenza), four cases from nearby villages of the Belluno province, all in the Veneto Region.

No subjects who worked at this factory have been identified so far in some Regional Mesothelioma Registries (namely Liguria, Emilia-Romagna, Tuscany).

Ten subjects have already received compensation from the Swiss Insurance Institute because the disease was considered to be due to occupational exposure to asbestos, whereas the remaining did not receive compensation, possibly because not requested.

Discussion and conclusion

The factory where these subjects had worked is one of the oldest cement-asbestos factories in the world. It opened in 1904 and is still active. The company has owned several cement-asbestos factories in Europe and in other continents over this period. It seems worth noting that one of these factories, located in Casale Monferrato, Alessandria, Piemonte, Italy, which has been active from 1907 to 1985, was the oldest cement-asbestos factory in Italy, and is at the origin of a huge number of mesothelioma among the workers (Magnani et al. 1987; 1996), because domestic exposure through relatives working at the industry, and substantial environmental exposure for the population of the town (Magnani et al. 1993; 1995; 2001).

Several cement-asbestos materials were produced in the Swiss factory, such as flat and corrugated sheets, pipes, tubes, both mechanically and hand shaped materials (flower-baskets, garden and home furniture) (Eternit 1983). Usually, a mixture of commercial types of asbestos fibers is used in the cement-asbestos production: chrysotile, in a larger proportion, and crocidolite and amosite.

Subjects we interviewed told us that during the 1960s and 1970s more than 1000 people were employed in the factory, many of whom were migrants from various countries, including Italy. The Italians were also from regions other than those where mesothelioma cases have been detected.

The fact that many Italians began to work at the factory in the 1950s reflects the pattern of post World War II emigration from Italy to Switzerland.

Mesotheliomas have already been documented among former employees of this factory. An increasing number of mesotheliomas have been diagnosed since 1961 in Zurich Canton, among subjects who had worked in cement-asbestos production (Rüeggner 1989; Rüttner et al. 1974; Rüttner 1983), and compensation has been awarded by the Swiss Insurance Institute for an increasing growing number of asbestos-related cancers (including mesotheliomas) among cement-asbestos workers (Maillard et al. 1982; Rüttner et al. 1990; Neumann et al. 2001; Eternit 1983). The Glarus Canton, where the factory is located, ranked first in Switzerland for the Standardised Mortality Ratio (SMR) from pleural cancers in the years 1970–80 in both males and females (SMR 587 and 350, respectively), and among females in 1980-90 (SMR 825) (Schüler & Bopp 1992) and "at risk occupation" on the death certificate was recorded "in more than half of the male deaths from cancer of the pleura" (SMR computed using the mortality in the whole of Switzerland as reference).

All the studies cited did not include the mesothelioma cases we presented, because our cases were diagnosed in Italy.

As far as Italy, it seems worth noting that a recent evaluation of the mortality from primary pleural at each municipality level done by the National Institute of Health, comparing the rates in each municipality to the mean of each Region, suggested an higher than expected value among the residents of Bassano (Vicenza province) between 1988 and 1994 (10 deaths observed in both sexes versus 4.17 expected; standardised mortality ratio 240, 95% confidence interval 115–441) and its was suspected that work in local clay goods and glass industries could explain the excess (Di paola et al. 2000). Our data suggest that work abroad at a cement-asbestos had increased the local mortality.

The mesotheliomas we identified probably underestimate the cases already occurred: our search has been limited to some Italian areas, some regional registries are recently established and did not investigated all cases occurred (for percentages varying from 16% to 50% depending on the registries). The higher number of mesoteliomas detected in Veneto and Puglia Region could be related to both the relevance of migration from these areas and the wider retro-

spective work done by the two regional registries. We hope that an evaluation of the asbestos risk for Italian migrant workers could be triggered by our data, because the topic has not received so far enough attention.

In addition to mesothelioma, we have already detected deaths from asbestosis and lung cancer among former workers at this factory who returned to the Veneto region. Some returned migrants provided the names of their returned colleagues and their vital status was searched. These data suggest the need to identify and trace migrant workers and returned migrants and to understand the dimension of asbestos-related diseases among the whole workforce of the factory.

From the point of view of public health, epidemiological data are needed for planning possible remedial actions.

In the Veneto region a project is now on-going aimed at identifying, starting from the rosters of factories and the requests for compensation, subjects at high risk of pulmonary cancers because had had prolonged exposures to asbestos at work. Current smokers are advised to stop smoking and invited in cross-sectional examinations. Identifying the returned migrants is an essential element for carrying out this program, but this could be done if data are provided to us on the subjects who worked at the factory and in searching if still in Switzerland or returned home.

It has been documented that mesotheliomas have occurred among former residents of the Turkish area of Karain who migrated to Sweden (Boman et al. 1982) or to Germany (Neumann et al. 2001), because of the previous exposure to erionite, a potent risk factor for mesotheliomas.

The spread of mesothelioma registries could increase the attention to the a broad range of possible exposures, and increase the scanty information on mesotheliomas due to occupational exposures among migrants for work.

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Zusammenfassung

Mesotheliom bei zurückgekehrten Italienern, die als Migranten in einer Zement-Asbest-Fabrik in der Schweiz gearbeitet haben

Fragestellung: Das Vorkommen des Mesothelioms in Italien bei Personen berichten, die als Migranten in einer Zement-Asbest-Fabrik in Niederurnen, Schweiz, gearbeitet hatten und in ihr Heimatland zurückgekehrt sind.

Methode: Information über die Krankheit und zum Lebenslauf wurde bei den regionalen Mesotheliom-Registern gesammelt. Es wurden nur Fälle betrachtet, die aufgrund einer histologischen Untersuchung als pathologisch diagnostiziert wurden.

Ergebnisse: 15 Mesotheliom-Fälle (13 pleural, *2* perithoneal; 12 Männer, 3 Frauen) wurden bei den Italienern, die in der Fabrik gearbeitet hatten, identifiziert. Keiner hatte weitere berufsbedingte Asbestbelastungen. Die Mehrheit lebte im Veneto (Nordosten) und in Puglien (Süditalien).

Schlussfolgerungen: In der Fabrik dem Asbest ausgesetzt zu sein, hat eine grosse Anzahl von berufsbedingtem Krebs erzeugt, darunter bei vielen Emigranten. Um die Risiken nicht zu unterschätzen und Entschädigungen zu ermöglichen, sollten Krankheiten erhoben werden, die bei in ihr Heimatland zurückgekehrten Arbeitnehmern auftreten. Arbeitsbedingte Migration ist jetzt als ein Faktor beim Entstehen des asbestbezogenen Mesothelioms in Italien in Erscheinung getreten.

Résumé

Mésothéliomes chez les Italiens, de retour dans leur pays d'origine, qui furent travailleurs immigrés dans une usine de ciment contenant de l'amiante en Suisse

Objectifs: Décrire la survenue de mésothéliomes en Italie chez des travailleurs immigrés d'une entreprise de production de ciment contenant de l'amiante à Niederurnen, en Suisse, et qui sont retournés dans leur pays d'origine.

Méthodes: L'information sur la maladie et sur l'histoire professionnelle a été obtenue auprès des registres régionaux de mésothéliomes. Nous ne considérons ici que les cas diagnostiqués sur une base histo-pathologique.

Résultats: 15 mésothéliomes (13 pleuraux, 2 périthonéaux, rapport hommes/femmes = 12/3) ont été identifiés chez des Italiens, qui avaient travaillé dans cette entreprise. Aucun d'entre eux n'avait une autre exposition à l'amiante. La majorité vivait en Vénitie (nord-est de l'Italie) et dans les Pouilles (sud de l'Italie).

Conclusions: L'exposition à l'amiante dans cette entreprise a déjà causé un nombre important de cancers professionnels parmi les employés, dont une large proportion était des immigrés. Afin d'éviter une sous-estimation du risque et de permettre une compensation, les maladies qui surviennent chez des travailleurs immigrés retournés chez eux doivent être évaluées. La migration professionnelle est à l'origine de mésothéliomes liés à l'amiante survenant aujourd'hui en Italie.

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Address for correspondence

Enzo Merler, MD
SPISAL, ULSS 16
Via Ospedale 22
I-35138 Padova
Tel.: +39 049 8214314
Fax: +39 049 8214256
e-mail: emerler@ulss16.padova.it