

Imaging and imagination in the diagnostics of asbestosis

STEFANO M. CANDURA¹, ILARIA MARRADI²¹Occupational Medicine Unit, Department of Public Health, Experimental and Forensic Sciences, University of Pavia and Istituti Clinici Scientifici Maugeri IRCCS, Pavia, Italy²Forensic Medicine Specialist, Guamo, Capannori (Lucca), Italy**KEY WORDS:** Asbestosis; imaging; forensic medicine**PAROLE CHIAVE:** Asbestosi; diagnostica per immagini; medicina legale

SUMMARY

Two cases of asbestosis diagnosed on the basis of anamnestic, clinical, and instrumental criteria, were not confirmed by forensic autopsy ordered by the public prosecutor to ascertain the cause of death. The two cases demonstrate that a suggestive working history can be misleading, in the absence of clear radiological signs and histopathological findings, and that asbestosis must be diagnosed following the criteria consolidated in the scientific literature, as any diagnostic errors can have serious legal consequences.

RIASSUNTO

«Diagnostica per immagini e immaginazione nella diagnosi di asbestosi». Due casi di asbestosi diagnosticati in base a criteri anamnestici, clinici e strumentali non sono stati confermati dall'autopsia disposta in sede giudiziaria, per accertare la causa della morte. I due casi dimostrano che un'anamnesi lavorativa compatibile con la diagnosi può essere fuorviante, in assenza di chiari segni radiologici e istopatologici. La diagnosi di asbestosi deve soddisfare i criteri consolidati nella letteratura scientifica, in quanto eventuali errori diagnostici possono avere gravi implicazioni legali.

Asbestosis is a fibrogenic pneumoconiosis caused by intense and prolonged exposure (≥ 25 -100 fibers/mL/year) to asbestos. The diagnostic gold standard is the histopathological examination of lung tissue (diffuse fibrosis and at least 2 asbestos corpuscles per cm^2 of tissue), however in medical practice most cases are diagnosed in probabilistic terms based on anamnestic, clinical and instrumental criteria (3). On radiograms, asbestosis typically presents with small, irregular opacities in the lung bases, which subsequently tend to converge and increase in number. Characteristic tomographic signs are dotlike images tending to form branched structures, on the periphery of the lower lung fields (2, 3).

Recently, we verified *post mortem* the diagnosis of asbestosis, formulated during life without histopathological findings, in two men with previous occupational exposure to asbestos fibres in a metal-working industry. The investigation was carried out on behalf of the judicial authority (public prosecutor's office) to ascertain whether asbestosis (or other asbestos-related diseases) had been the cause of their deaths.

Workplace information was collected using the documentation contained in the records of a previous judicial proceeding, relating to the same industrial plant. The clinical histories were reconstructed on the basis of the health records acquired during

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Corresponding author: Stefano M. Candura, Occupational Medicine Unit, Department of Public Health, Experimental and Forensic Sciences, University of Pavia and Istituti Clinici Scientifici Maugeri IRCCS, Pavia, Italy - Email: stefano.candura@icsmaugeri.it

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the investigation of the prosecutor. Full autopsy was performed on the corpses (external inspection and dissection with opening of the body cavities: skull, thorax and abdomen), during which samples of lung tissue and other organs were collected, and subsequently examined histologically (staining with hematoxylin-eosin).

The first man had worked as a welder for about 40 years (from the 1960s) in insufficient occupational hygiene conditions, without adequate personal protection. At 68 years of age, after retirement, a high resolution chest tomography (HRCT) had demonstrated the presence of fibrocalcific pleural plaques. At age 71, he had received a diagnosis of smoking-related (20 cigarettes/day) chronic obstructive pulmonary disease (COPD) and asbestosis (based on aspecific radiological findings). After several hospitalizations for acute respiratory failure and supraventricular tachyarrhythmia, at the age of 76, he was found dead in his home. The autopsy revealed: cardiomegaly with disseminated myocardiosclerosis and subcritical coronary artery stenosis; pulmonary anthracosis with areas of focal fibrosis; diffuse thickening and pleural plaques (probably asbestos-related); no sign (macroscopic or histological) of asbestosis.

Similarly, the second man had been a boilermaker for about 30 years (from the 1960s), working in poor occupational hygiene conditions, without adequate personal protection. While alive, he received an annuity from INAIL (National Institute for Insurance against Accidents at Work) for “lung asbestosis with COPD” (smoking: 20 cigarettes/day) and “severe obstructive syndrome”. Health records indicated severe cardiovascular comorbidity (coronary insuffi-

ciency, atrial fibrillation, arterial hypertension). The latest HRCT follow-up (a year before his death) documented “no signs of pulmonary interstitial disease”. He died of septic shock in an acute abdomen, at 74 years of age. Autoptic findings: ascending colon abscess; left ventricular hypertrophy with subcritical coronary stenosis; acute pulmonary oedema with inflammatory infiltrates; no sign of asbestosis.

The two cases demonstrate how a diagnosis of asbestosis formulated in patients with suggestive working history, but in the absence of indicative radiological signs and histopathological findings, cannot find confirmation in the autoptic examination. Therefore, in clinical practice, this diagnosis must be made with caution, following the criteria consolidated in the scientific literature (3). Any diagnostic errors can have serious consequences in the forensic field (1).

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