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Short Communication

The Role of Anatomic Pathology in Medical Practice - The Significance and Limitations of Autopsy and Histology

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Due to the great advances in diagnostics (imaging, molecular, genetic, etc.) and the drastic decline in autopsies (lack of confrontation), one might think that pathological examinations (at least in diseases of autoimmune, musculoskeletal, metabolic origin, etc.) are no longer necessary.

Diseases change over time, partly due to treatment and partly due to other reasons (environmental, genetic etc.).

Clinical symptoms can be misleading. Complications of the underlying disease and/or comorbidities can influence each other, classic clinical symptoms can change, and fatal complications of the underlying disease or important comorbidities may remain unrecognized.

Pathology should be considered according to its value. Pathological findings or diagnoses are data that clinicians must compile together with other findings as part of the patient's medical history, clinical picture, course of illness, etc. It is the clinician's responsibility to evaluate the pathological finding or diagnosis according to its significance (taking into account the pathologist's professional experience, of course).

Institutions dealing with general diseases (including autoimmune, musculoskeletal, cardiorespiratory, gastrointestinal etc. diseases) are confirmed with basic diagnostic tests, including general pathology procedures.

Accurate knowledge of each other's strengths and weaknesses and the use of common terminology are obvious requirements for proper patient care.

I would like to emphasize the decisive role of pathology by presenting some examples of diagnostic pitfalls in this short comment, highlighting the diagnostic value of an autopsy and histological examinations.

Until the end of the 20th century all patients who died in a hospital in Hungary were autopsied.

Between 1970 and 2000, 11537 patients died at the National Institute of Rheumatology; of these, 234 patients had rheumatoid arthritis (RA), and all of them were autopsied.

RA population n = 234	Mortality (in % of 234)	Clinically diagnosed fatal cases (in % of mortality)
RA related cardiorespiratory complications		
Myocardial infarction due to vasculitis Main coronary arteritis - Myocardial necrosis Coronary arteriolitis - Myocardiocytolysis, multiple	18 (7.69% of 234) 4 of 18 14 of 18	4 of 18 (22.2%) 0 of 4 4 of 14
Circulatory failure due to: Endo-, myo-, epi- or pancarditis Autoimmune vasculitis AA amyloidosis	19 (8.12% of 234) 13 of 19 3 of 19 3 of 19	2 of 19 (10.53%) 0 of 13 2 of 3 0 of 3
Rheumatoid pneumonia	3 (1.28% of 234)	0 of 3 (0.0%)
Interstitial lymphoid hyperplasia	1 (0.43% of 234)	0 of 1 (0.0%)
Bronchopneumonia related to RA*	12 (5.13% of 234)	12 of 12 (100.0%)
Pulmonary embolism related to RA*	7 (2.99% of 234)	7 of 7 (100.0%)
Subtotal	60 (25.64% of 234)	25 of 60 (41.67%)
Atherosclerosis related cardiorespiratory complications		
Myocardial necrosis (due to main coronary artery thrombosis)	11 (4.70% of 234)	11 of 11 (100.0%)
Circulatory failure (due to myocardial fibrosis)	14 (5.99% of 234)	14 of 14 (100.0%)
Encephalomalacia (brain necrosis) (due to cerebral artery sclerosis or thrombosis) Pulmonary embolism (with brain necrosis) (due femoral vein thrombosis) Bronchopneumonia (with brain necrosis)	3 (1.28% of 234) 2 (0.85% of 234) 5 (2.14% of 234)	3 of 3 (100.0%) 2 of 2 (100.0%) 5 of 5 (100.0%)
Pulmonary embolism (without brain necrosis (due to femoral vein thrombosis)	4 (1.71% of 234)	4 of 4 (100.0%)
Bronchopneumonia (without brain necrosis (due to atherosclerosis related causes)	5 (2.14% of 234)	5 of 5 (100.0%)
Hemorrhagic intestinal necrosis (due to mesenterial artery thrombosis)	2 (0.85% of 234)	2 of 2 (100.0%)
Subtotal	46 (19.66% of 234)	46 of 46 (100.0%)
Total	106 (45.3% of 234)	71 of 106 (66.98%)

Table: *The table summarizes the mortality of RA and atherosclerosis related cardiorespiratory insufficiencies, and the ratio of clinically diagnosed fatal cases.*

**RA related bronchopneumonia or pulmonary embolism were caused by autoimmune vasculitis, AA amyloidosis, femoral vein thrombosis, interstitial pneumonitis etc.*

RA related cardiorespiratory diseases led to death in 60 (25.64%) of 234 patients; of these 60 fatal cases only 25 (41.67%) were clinically recognized.

Atherosclerosis related cardiorespiratory diseases led to death in 46 (19.66%) of 234 patients. Atherosclerosis with lethal outcome was always correctly diagnosed (100.0%), but the immediate causes (e.g. embolism, myocardial infarction) of death was not always recognized clinically.

RA related cardiopulmonary complications are more difficult to recognize than those associated with atherosclerosis.

Based on discrepancies between autopsy data and clinical diagnosis, György Romhányi's empathetic approach is cited: "the clinical symptoms can be misleading" or " the poor clinician, he did everything he could, but the patient ended up here. No one should be overtreated. It is important to know how long it is necessary, and how long it is acceptable to treat someone" [1].

This short discussion stresses the importance of autopsies and calls for further studies revealing the true prevalence of cardiorespiratory, gastrointestinal, renal etc. diseases, identifying asymptomatic and subclinical cases, clarifying the mortality of these (although the chances of this are slim due to the drastic decline in the number of autopsies) [2].

McPhee's (1996) comment remains true to this day: "autopsy is the antidote to misdiagnosis [3].

Limitations:

The limitations of pathology should also be mentioned (without claiming to be exhaustive). Despite detailed autopsies and examination of numerous organs (100 - 150 tissue samples) taken from patients.

1. Underlying and concomitant diseases and complications may remain undetected, especially in the case of mild or early stages of lesions.
2. In the case of circumscribed lesions, sampling of healthy tissue may conceal the pathological lesion, for example miliary dissemination of tuberculosis.
3. The weak immune response (immunoreactivity) of elderly patients, the autoimmune nature of diseases, steroids and/or immunosuppressive drugs, and recent biological therapy may also play a role in missing the clinical diagnosis of complications such as autoimmune vasculitis, inactive or active tuberculosis, etc.
4. Dominant organ and tissue lesions may mask the underlying cause, for example behind the dominant organic and ischemic tissue changes the underlying autoimmune vasculitis may remain hidden etc.
5. The examiner "sees what he knows".
6. In the case of an infection, aggressive antibiotic therapy may eliminate an inflammatory infiltration, leaving only severe toxic organ and tissue damage etc.

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