SIMLA

43° CONGRESSO NAZIONALE SIMLA VERONA

SIMLA: PER UNA NUOVA COSCIENZA E CONOSCENZA NELLA MODERNA MEDICINA LEGALE E NELLA SCIENZA FORENSE
18 - 20 SETTEMBRE 2018
VERONA, PALAZZO DELLA GRAN GUARDIA

Consultation interface between Pathologists and Forensic Science Experts for histopathology examination

V. Cirielli[a,b], M. Brunelli[c], F. Bortolotti[a], Z. De Battisti[a] , G. Del Balzo[a], A. De Salvia[a], A. Ecchel[c], C. Laposata[a], C. Ghimenton[c], D. Raniero[a], E. Vermiglio[a], M. Portas[a], A. Scarpa[c], F. Tagliaro[a], S. Turrina[a] and D. De Leo[a].

[a]Legal Medicine, Department of Diagnostics and Public Health, AOUI - Verona
[b] Legal Medicine, Department of Prevention, ULSS 8 Berica - Vicenza
[c]Pathology, Department of Diagnostics and Public Health, AOUI - Verona

Background

Is Routine Histopathologic Examination Beneficial in All Medicolegal Autopsies?

D. Kimberly Molina, MD, Leisha E. Wood, MD, and Randall E. Frost, MD

TABLE 2. Original Cause of Death

Cause of Death	No. of Cases	% of Cases
Gunshot wounds	42	22
Blunt force injuries	42	22
Cardiac*	33	18
Drug intoxication†	29	15
Asphyxia	12	6
Pulmonary embolus	6	3
Other: natural‡	5	3
Stab wounds	6	3
Drowning	4	2
Hyperthermia	3	2
Seizure disorder	3	2
Cirrhosis	2	1
Other: nonnatural§	2	1
Total	189	100

1/189= <1%

(*Am J Forensic Med Pathol* 2007;28: 1–3)

Background

JOURNAL OF FORENSIC SCIENCES

J Forensic Sci, January 2010, Vol. 55, No. 1
doi: 10.1111/j.1556-4029.2009.01240.x
Available online at: interscience.wiley.com

PAPER
PATHOLOGY AND BIOLOGY

Geoffroy Lorin de la Grandmaison,[1] M.D., Ph.D.; Philippe Charlier,[1] M.D., Ph.D.; and Michel Durigon, M.D., Ph.D.

Usefulness of Systematic Histological Examination in Routine Forensic Autopsy*

428 autopsy cases

8% cause of death determined by only histology

Background

COLLEGE of AMERICAN PATHOLOGISTS

Standards for the Practice of Forensic Pathology

Key word 1998: discretion

The extent of histopathological of the autopsy tissue is a the discretion of the pathologist

National Association of Medical Examiners (NAME)

2005

The forensic pathologist shall perform histological examination in causes of no gross anatomic or toxicological cause of deaths

1) sudden infant deaths
2) unexplained deaths
3) when necessary establish a tissue diagnosis

Background

Debate remains to how much the magnitude of histopathologic examination may be of benefit to medicolegal purposes

Objective & Aim

We sought to address the question after reviewing consultation cases requested to pathologists from forensics by an AUDIT in a real word setting

Material & Methods

We reviewed Consultations performed in Anatomic-Pathology from an Hub single center (Verona) based on requests received from Legal-Medicine Institutes (forensic pathologists)

January 2015 to August 2018

Audit - Database

Results: epidemiology

2015 yr: n. 124
2016 yr: n. 119
2017 yr: n. 134
2018 yr: n. 121 (august)

total: 499 forensic autopsies

54 consultations have been performed along three years

54/499= 10.8%

Results

- Gross analysis was requested in 24/54 (44%)

- Histopathology was requested in 31/54 (57%) performed as follows:

1) on single organs primary on lung&heart in 17/54 (31%)
2) whereas multi-organ sampling was performed in 14/54 (26%)

Results

3/54 6% infant sudden death (cardiac fibroelastosis, meconium aspiration syndromeaspirazione)

9/54 17% oncological typing (histotype, grading, staging)

42/54 78% no gross cause of death or need of tissue diagnosis (rule out malignancy, other…)

Results: multiorgan samplings

Lungs
Heart
Liver
Kidneys
Brain
Pancreas
Adrenal glands
Spleen

90% main organs

Thyroid
Parathyroid
Vessels (Aortic)
Bladder
Enteric system
Genital tracts

10% minor

Bone-marrow sampling was present in only 3/54 (5%)

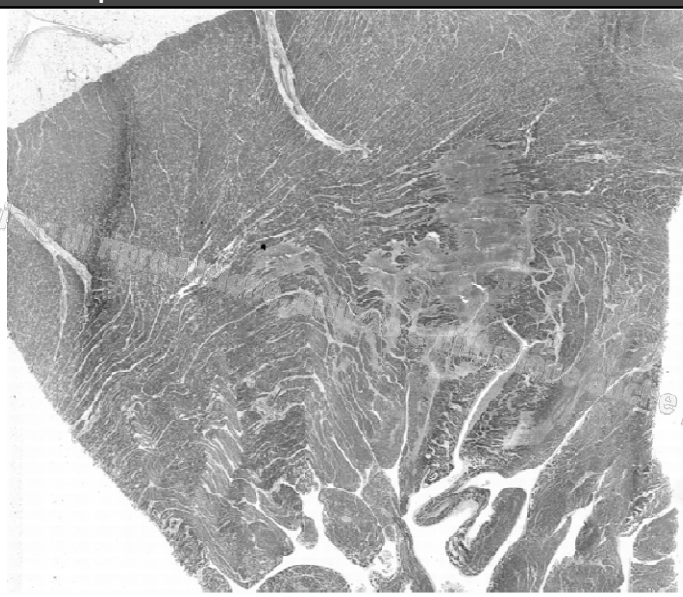
Results

- Special stains was needed in 16% of cases (9/54)
- Immunohistochemistry was needed in 33% of cases (18/54)
- Molecular analysis was needed in 4% of cases (2/54)
- Standard methodology was needed in 15% of cases (8/54)

Gross re-sampling

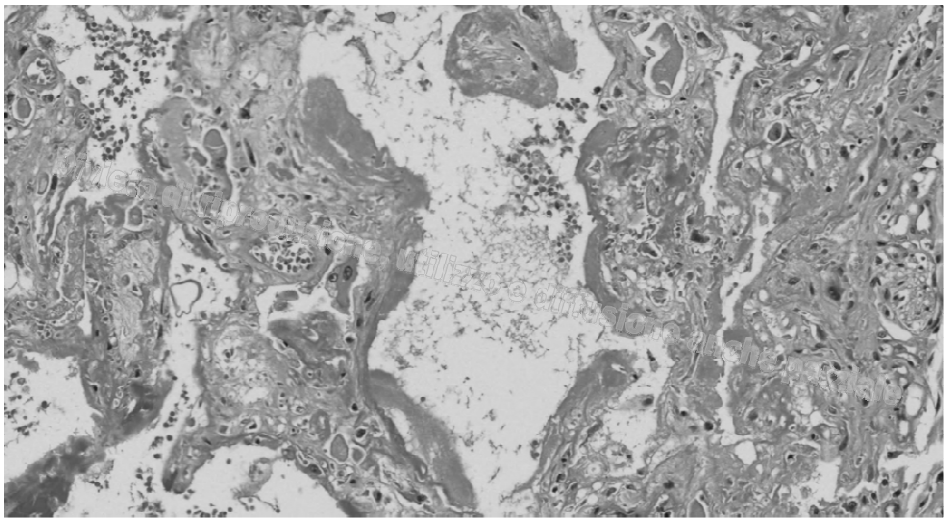
Case no. 3

special stains: Masson trichromic



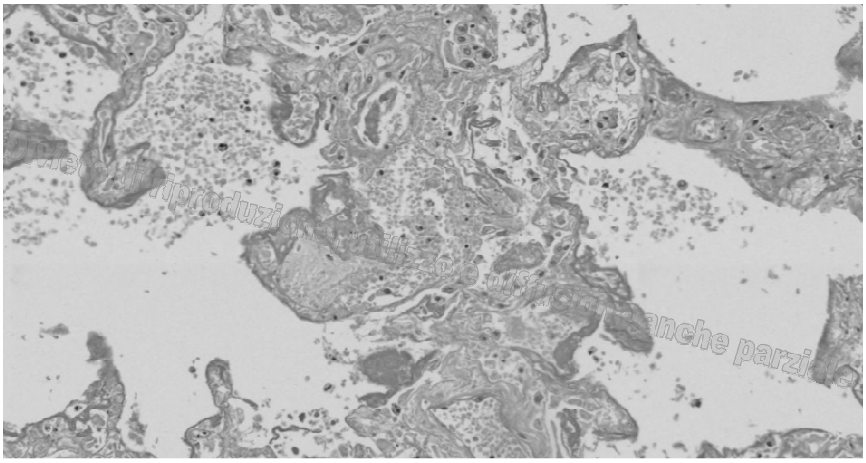
Case no. 3

H&E and need of additional stains



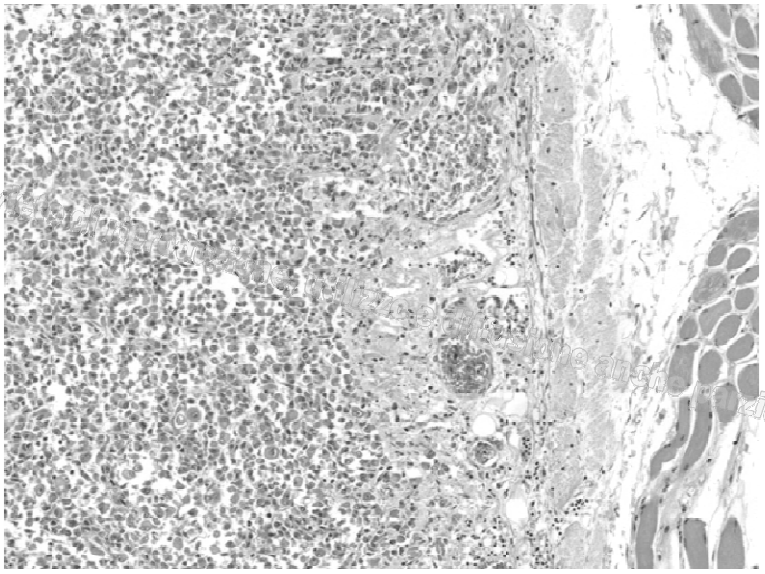
deposition of ialine membranes Case no. 16

special stains: Alcian-PAS



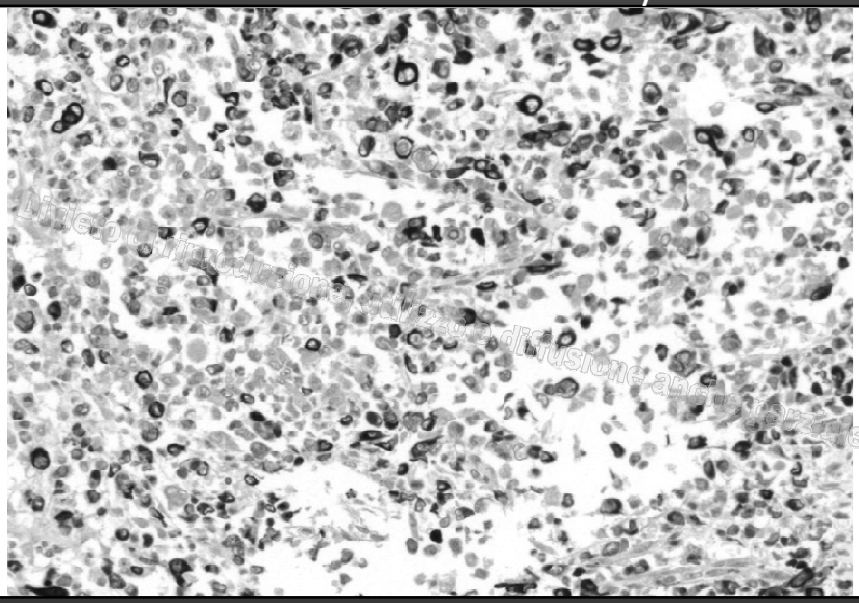
deposition of ialine membranes Case no. 16

oncology



suspicious of mesotelioma Case no. 22

immunohistochemical analysis



calretinin Case no. 22

Molecular analysis

Patient A

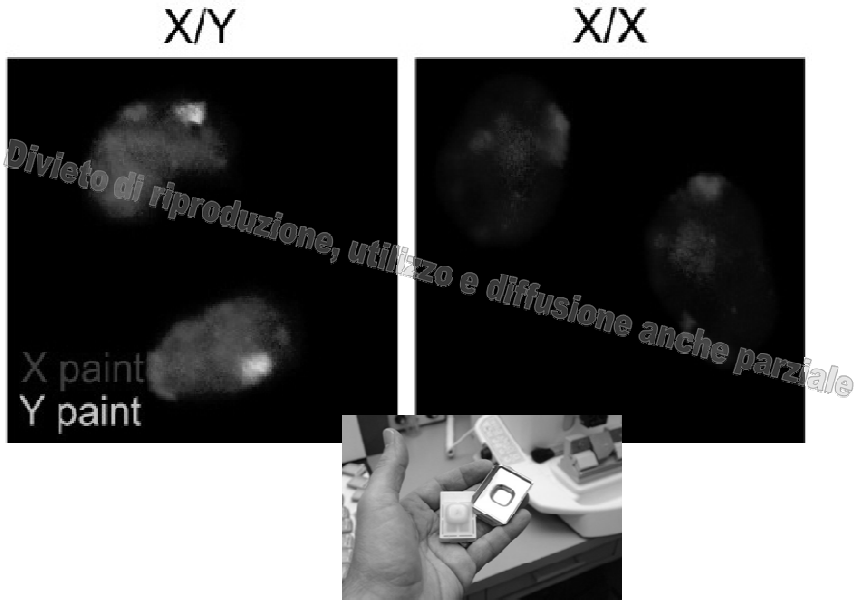
cancer

Patient B

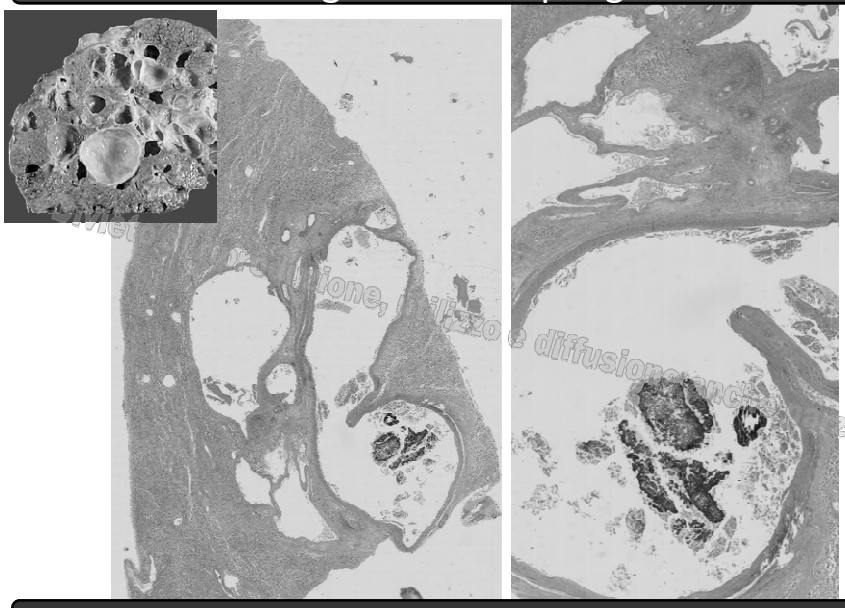
no cancer

exchange of bioptic material

cytogenetic FISH molecular analysis

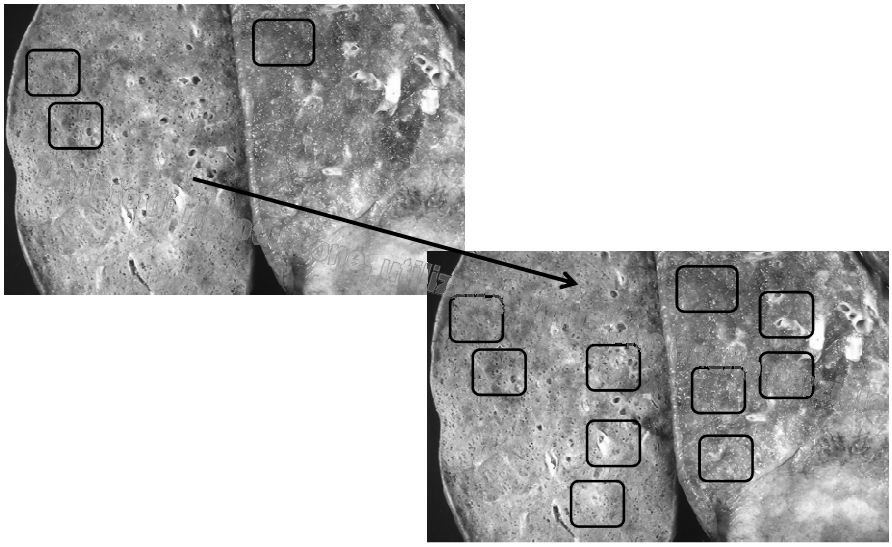


gross re-sampling



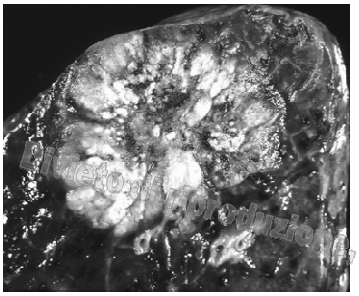
caroli disease versus colangiocarcinoma

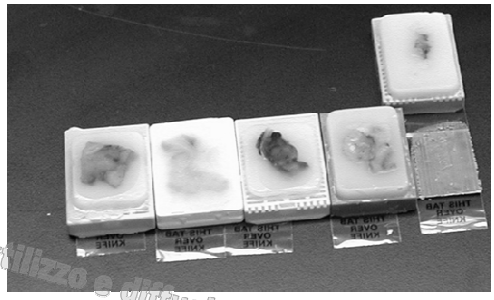
gross re-sampling

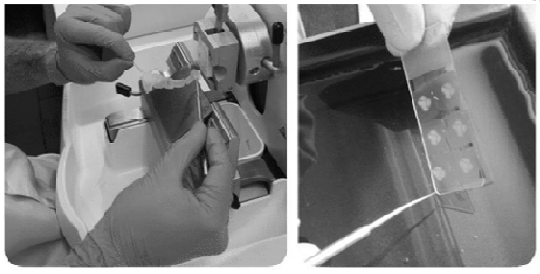


doubled tissue block sampling

asbestos fibers research

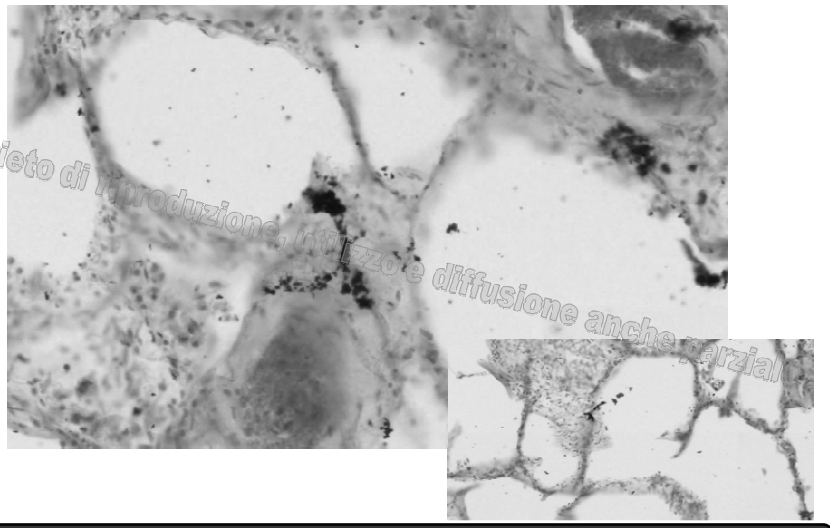






30 µm thick sections

asbestos fibers research



Perls stain

ICH	Number of cases
Calretinin	3
CD1a	1
CD3	6
CD8	2
CD15	2
CD20	8
CD34	1
CD45	2
CD61	1
CD68	6
CD71	1
CD79alfa	2
CD138 (PCs)	3
CDX2 protein	1
CK5	3
CK8/18	2
CK19	2
ChromograninA	1
Deltan-p63	1
EMA	2
Fat VIII	1
GATA-3	1
HCG	1
HMB45	1
Kappa	1
Ki67	3
Lambda	1
MNDA	2
MPO	3
Napsin A	2
P63	2
PAX-5	1
S100	1
Synaptophysin	1
TdT	1
TTF-1	3
Vimentin	4
Wilms' tumor	3

immunohistochemical processes

- commercially available antibodies
- standardization on formalin-fixed and paraffin embedded tissue
- automation
- robust processes
- interpretation

annual quality assessment

Conclusions

1) standard methodology was changes in 15% of cases primary for gross re-sampling

2) immunohistochamical analysis was needed in 33% of cases to answer medico-legal questions

3) molecular analysis (cytogenetic FISH) in around 4% of cases

4) lack of systemic sampling of bone marrow (absence of information useful for forensics)

Conclusion

10.8% of cases usually need an interface between forensic and anatomic pathologists