

**MINISTRY OF HEALTH OF UKRAINE
BOHOMOLET'S NATIONAL MEDICAL UNIVERSITY
DEPARTMENT OF FORENSIC MEDICINE AND MEDICAL LAW**

B. MIKHAILICHENKO, N. EHWARD, S. KUBALYA

EARLY AND LATE SIGNS OF DEATH (ATLAS)



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These methodologic materials Study guide of the practical classes course for a practical class in English, based on a competent approach with students of higher medical and justice education institutions with III-IV level of accreditation.

These methodologic materials Study guide of the practical classes course can be of use for medical workers, employees of all entities of Ministry of Internal Affairs, students, interns, teaching professors of higher medical and justice educational institutions.

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EARLY SIGNS OF DEATH INCLUDE

POSTMORTEM LIVIDITY

Postmortem lividity – a clear sign of biological death, in which blood shines through the skin in the form of blue-purple spots.

Occurrence mechanism of death spots is connected to: loss of tone of the vascular wall; passive movement of blood by vessels under the influence of gravity and its concentration in the located below the body.

STAGES OF DEVELOPMENT OF DEATH SPOTS:

1. Hypostasis - is characterized by the movement of blood through the vessels and lasts from 2 to 12 hours after the onset of death.

2. Stasis - is characterized by the constant release of plasma into the perivascular space and blood clotting and lasts from 12 to 48 hours after the onset of death.

3. Imbibition - characterized by hemolysis of erythrocytes, diffusion of hemoglobin into the vessel wall, leaving it beyond and impregnation of the surrounding tissue and lasting more than 48 hours after the onset of death.

By observing death spots you can: determine the how long-ago death occurred and determine the position of the body; make assumptions about the cause of death.



**DARK BLUE-COLOR BLADES
ON THE BACK-SIDE SURFACE OF THE BODY
(12 HOURS AFTER DEATH)**

(Case from the expert practice of Dr. Erhard N.)

MUMMIFICATION

MUMMIFICATION – evaporation of moisture from the surface of the mucous membranes of the lips, cornea and conjunctiva of the eyes, scrotal skin, penis head and vaginal mucosa).

Characteristics of the eye mucosa mummification:

- corneal opacity (2-3 hours after death).

Injured parts of skin characteristics in mummification:

- dense, reminiscent of parchment ("parchment spots");
- becomes yellow-brown in color.



**CORPORATE DRYING OF THE MICROSOFT OF THE EYE
(6-12 HOURS AFTER DEATH)**

(Case from the expert practice of Dr. Erhard N.)



CORPORATE DRYING ON THE INJURED SKIN OF THE TOP

(Case from the expert practice of Dr. Erhard N.)

POSTMORTEM RIGIDITY

Postmortem rigidity – is one of the signs of death due to chemical changes in muscle tissue.

Postmortem rigidity characteristics:

- muscle compaction, which is associated with the disappearance of adenosine triphosphoric acid (ATP) from the muscles;
- accumulation of the lactic acid muscles.

Postmortem rigidity development stages:

1. It is found in the chewing muscles of the face (1-3 hours after death).
2. Spreads to the muscles of the neck, chest, abdomen and upper extremities (4-6 hours).
3. It covers all the muscles of the body and fixes the posture of the corpse (12-24 hours).
4. The postmortem rigidity gradually weakens in the same order in which it appeared (24-48 hours).
5. It disappears completely (in 3 to 7 days).



**THROUGH CLAMP IN THE MUSCLES OF THE UPPER LIMBS
(4-6 HOURS AFTER DEATH)**

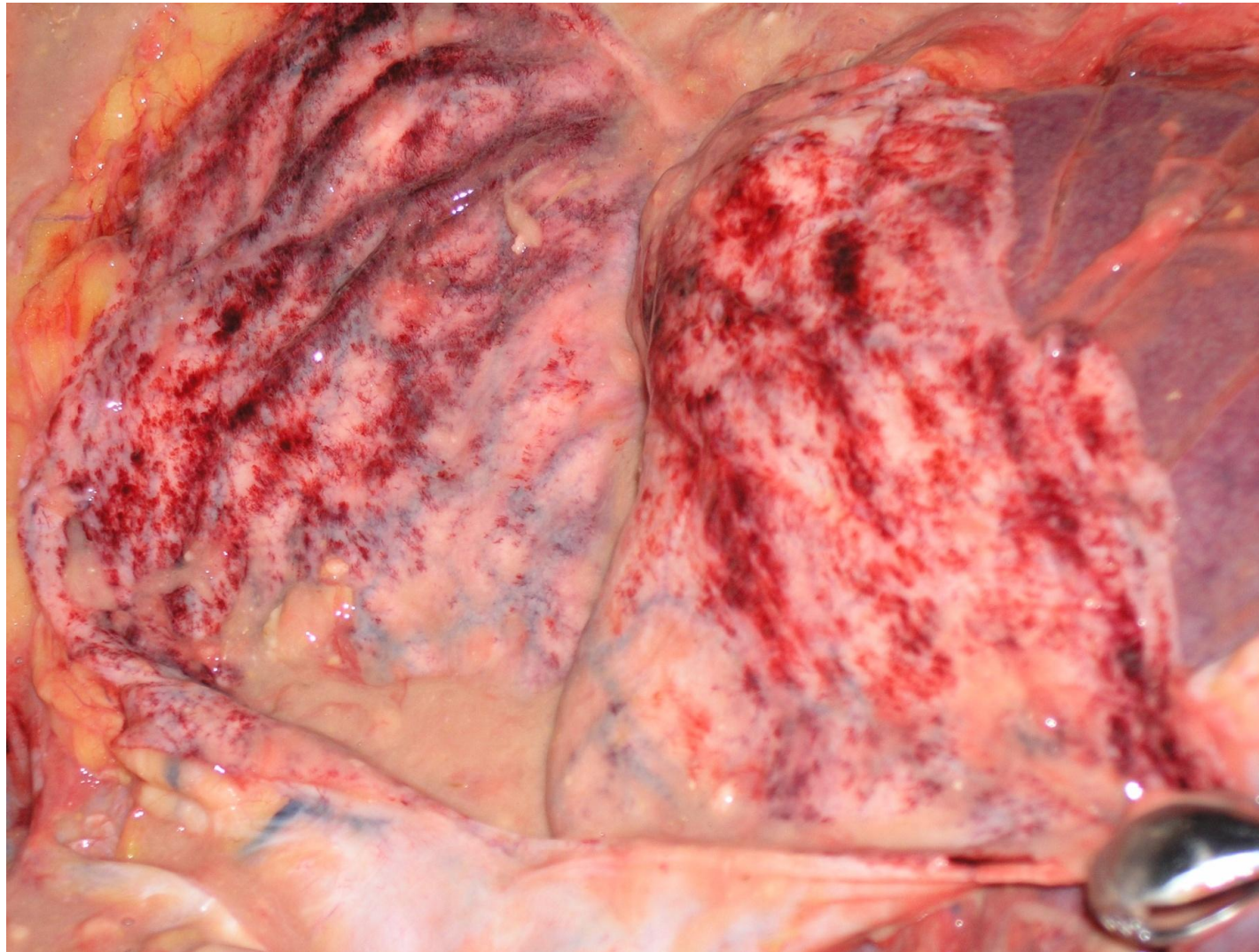
(Case from the expert practice of Dr. Erhard N.)

CADAVER AUTOLYSIS

CADAVER AUTOLYSIS – is a process of self-digestion of tissues caused by the action of proteolytic enzymes, without the participation of microorganisms. The internal organs under the action of enzymes are impregnated with blood plasma till it comes red.

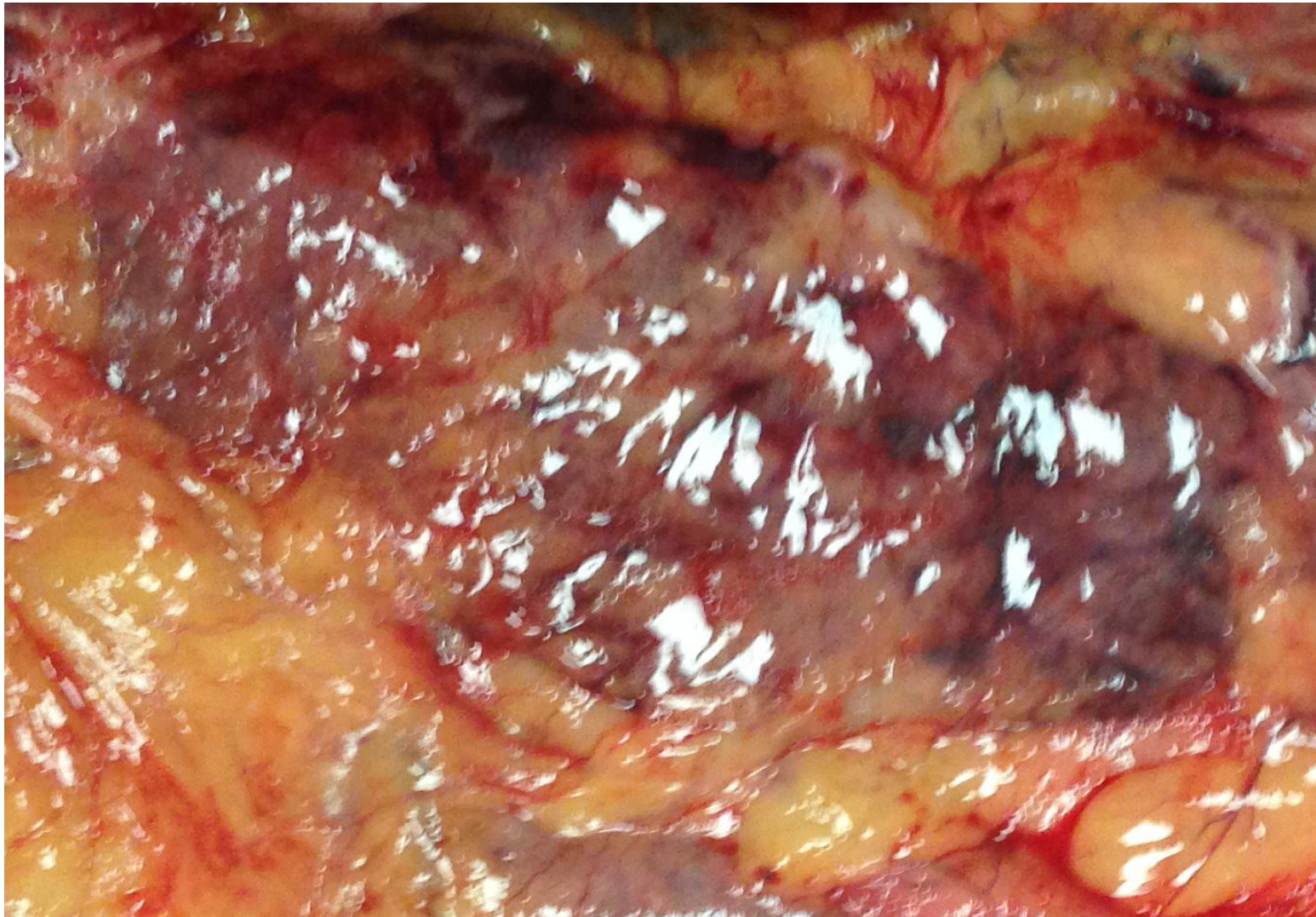
Features of autolysis:

- internal organs under the influence of enzymes dim, impregnated with red blood plasma;
- the gastric mucosa becomes brown in the course of the vessels, easily separates from the submucosal layer, the stomach wall slips, softens and crawls;
- the mucous membrane of the esophagus is whitish, slipping from the touch;
- the pancreas becomes dirty red, flaccid, partially melted, reminiscent of hemorrhagic necrosis;
- adrenal medulla rapidly decays.



CORPORAL AUTOMYSIS OF THE GASTRIC MUCOSA

(Case from the expert practice of Dr. Erhard N.)



OUGH SUBSTITUTE TISSUE AUTOLYSIS

(Case from the expert practice of Dr. Erhard N.)

LATE DEATH SIGNS INCLUDE

DECAYING

Corpse decaying – is a complex microbiological process, with microorganisms' participation, which leads to decomposition occurrence of organic nitrogenous, mainly protein-like substances.

The first signs of decay are manifested on the 2-3rd day, when the skin in the iliac region becomes dirty green in color.

Due to the penetration of gut hydrogen sulfide and combining it with iron in blood hemoglobin and formation of iron sulfide.



**GREEN SKIN COLOR ON THE FRONT ABLE
STINS IN THE RIGHT BREAST OF THE BODY
(24-36 HOURS AFTER DEATH)**

(Case from the expert practice of Dr. Erhard N.)



**ROTTING VENOUS MESH IN THE HIP AREA
(3-4 DAYS AFTER THE DEATH OF DEATH)**

(Case of expert practice of Dr. Mikhailichenko B.)



**FULL BODY ROT
(8-12 DAYS AFTER DEATH)**

(Case of expert practice of Dr. Mikhailichenko B.)



INJURY BODY INSECT LARVAE

(Case from the expert practice of Dr. Erhard N.)

ADIPOCERE (SAPONIFICATION)

Adipocere (Saponification) – saponification of the corpse, resulting in the fat is broken down into glycerol and fatty acids (oleic, palmitic and stearic).

Body in a state of saponification it looks like a grainy mass grayish-white, which resembles a mixture of fat with sebaceous wax the brilliance and characteristic smell of rancid cheese.



ADIPOCERE (SAPONIFICATION)

MUMMIFICATION

Mummification - partial or complete dehydration of the corpse, resulting in the tissue of the corpse, losing moisture, gradually exposed to drying, wrinkle, become dark brown in color, and become dense.

Adult body mummification under favorable conditions can occur no earlier than 6-12 months, and in children corpses – it takes less time.





MUMMIFICATION

(Case from the expert practice of Dr. Kybalya S.)



MUMMIFICATION

(Case from the expert practice of Dr. Erhard N.)

PEAT TANNAGE

Peat tannage – a kind of dehydration that occurs in the corpse when it enters the peat swamps and soils that contain humic acids while the skin of the corpse becomes darker, internal organs and muscles become smaller in volume, bones become elastic and soft.





PEAT TANNAGE
(skin tensive, having a dark color)

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