

## MODEL OF PREVALENCE AND TREATMENT OF SKIN-DYSTROPHIC DAMAGES BY EXOTOXIC COMMAS

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### SUMMARY:

Patients with severe acute intoxications induced by drugs, narcotics, alcohol and organophosphates (according to our observations) develop specific skin syndrome. It reveals early after ingestion and includes erythema spots, bullae, soft tissue infiltrations, decubitus ulcers and necrosis. The aim of our study is to assess the effect of applying different schemes for treating skin damages in patients with comma after different poisonings. To build a model for their prophylaxis and treatment. We have used following methods: Prevalence – nurses' cure; clinetronic beds. Conservative cure- dry dressing; moist dressing with rivanol, jodasept, hibitan; fat dressing with deflamol, Vishnevski fat, cortisone fat; enzyme necrectomia with 40% acidi bensoici, iruxol. Surgery methods- debridment, skin-muscle plastic. Hyperbaric oxigenation - 10 consecutive procedures, repeated again after 20-30 days. Physio-therapeutical methods- helium- neon laser, magnetic field, diadynamic electricity (Bernard's current). Our results show a faster period of healing when skin lesions have been medically treated then left to heal spontaneously.

**Key word:** erythema spots, bullae, soft tissue infiltrations, decubitus ulcers and necrosis, drugs, narcotics, alcohol and organophosphates, comma, poisoning.

**Introduction:** Patients with severe acute intoxications induced by drugs, narcotics, alcohol and organophosphates (according to our observations) develop specific skin syndrome. It reveals early after ingestion and includes erythema spots, bullae, soft tissue infiltrations, decubitus ulcers and necrosis. The earliest skin eruptions are irregular, nonblanchable erythema spots and plaque. Its evolution is different, including spontaneous healing or development of vesiculae and bullae under the erythema. Bullous lesions are the most specific eruptions in acute intoxications. The bullae have thick walls, clear or hemorrhagic contents, surrounded by erythema, but without inflammatory reaction. Most frequently they localize in lower extremities: knees, medial area, where there is a touch, buttocks - lateral and medial aspects, lateral and medial aspects of ankles, dorsal

aspects of fingers, foot, heels. In the arm area they localize on the shoulder, forearm, arm, dorsal wrist, fingers. In the body- lateral back, chest, scapulae and typical pressure ulcer areas: sacrum, gluteus, capillitium. Erythema spots and bullae reveal 12-48 hours after ingestion of toxic substances. They may be detected by administration or after comatose state. Ulcerations, decubitus and necrosis are rarely described and only in barbiturate poisoning. First I.B. Sneddon (14) published data about deep necrosis in dead patients and later G.Adebahr (1) registered skin necrosis by 40% in autopsied patients. Deep ulcerations in barbiturate coma have been described (3, 9, 12). D.L.Harris (5) makes conclusion that they are alike combustion lesions and E.A.Lujnikov (7) defines them like dermatite bullous or dermatomyosites necroticans. Mandy and Ackerman (8), A. Rocamora (13) describe soft tissue infiltrations in patients with acute narcotic intoxications (heroin, methadone). In the literature there are very few records about the treatment methods of skin damages after acute intoxications. Our aim is to assess the effect of applying different schemes for treating skin damages in patients with comma after different poisonings. To build a model for their prophylaxis and treatment.

**Material and methods:** 76 patients with different acute intoxications (drugs, alcohols, organophosphates, narcotics, CO) have developed 161 different skin damages. Their kind and frequency are as follows: vesicles and bullae -  $53.94 \pm 5.72$  %; necrosis-  $36.84 \pm 5.53$ %; erythema spots -  $22.36 \pm 4.78$  %; decubitus ulcers-  $11.84 \pm 3.75$ %; erosio-  $7.89 \pm 3.09$ %; soft tissue infiltrations-  $6.57 \pm 2.84$ %. We have put into practice: "Program of Bulgarian Association to treat pressure ulcer, 2000"; "Program of American Association to treat pressure ulcer, 1989"; A few reference books of dermatology. (G. Princhovski-Devin, 1986; D. Bader, 1993; I. Leigh, 1994 ; T. Fitzpatrick, 1996; Z. Penev, 1987) (2,4,6,10,11).

We have used following methods: 1. Prevalence – nurses' cure; clinetronic beds. 2. Conservative cure - dry dressing; moist dressing with rivanol, jodasept, hibitan; fat dressing with deflamol, Vishnevski fat, cortisone fat; enzyme necrectomia with 40% acidi bensoici, iruxol. 3. Surgery

methods- debridment, necrectomia, skin-muscle plastic. 4. Hyperbaric oxigenation-10 consecutive procedures, repeated again after 20-30 days. 5. Physiotherapeutical methods - helium-neon laser, magnetic field, diadynamic electricity.

## RESULTS AND DISCUSSION

The times of healing (in days) are showed in table 1.

**Tabl. 1.** Comparing the effectiveness of different methods, applied to treat skin lesions in patients with toxic coma.

Method	Good influenced		Non influenced		Number	p
	N	%	N	%		
Dry dressing	4	80	1	20	5	>0.05
Moist dressing	8	44.4	10	55.6	18	>0.05
Fat dressing	10	42.1	9	57.9	19	>0.05
Helium-neon laser, magnetic field, diadynamic electricity	47	97.9	1	2.1	48	>0.05
Hyperbaric oxygenation (HBO)	0	0	10	100	10	<0.001
Necrectomia with enzymes	0	0	7	100	7	<0.01
Surgery necrectomia	10	83.3	2	16.7	12	>0.05
Plastic	2	100	0	0	2	>0.05
Total	81		40		121	

In our investigation we remove hypothesis zero ( $H_0$ ) for HBO and necrectomia with enzymes ( $p < 0.001$ ) ( they are less useful).

The times of healing by applying different methods are presented in tabl. 2 and times of healing of different skin lesions are presented in tabl. 3.

**Tabl. 2.** Comparison of the average period (in days) of healing by different methods.

Method \ Days	Number of cases								generally	Average number of days $\pm$ standard digression
	10	20	30	40	50	60	90	120		
Dry dressing	0	1	1	0	0	2	0	0	4	42.50 $\pm$ 20.62
Moist dressing	2	0	6	0	0	0	0	0	8	25.00 $\pm$ 9.26
Fat dressing	2	3	3	0	0	2	0	0	10	29.00 $\pm$ 17.99
Helium-neon laser, magnetic field, diadynamic electricity	0	12	10	3	18	4	0	0	47	58.30 $\pm$ 14.04
Surgery necrectomia	0	0	0	0	6	2	2	0	10	60.00 $\pm$ 16.33
Plastic	0	0	0	0	0	0	0	2	2	-

**Tabl. 3.** Comparison of the average period (in days) of healing of different skin lesions

Days	erythema	bullae	erosio	ulcus	Necrosis III degree	Necrosis IV degree	Soft-tissue infiltrates
10	-	2	-	-	-	-	-
20	4	7	5	-	-	-	-
30	4	13	4	1	-	-	-
40	-	6	-	-	-	-	3
50	-	-	-	5	12		1
60	-	-	-	4	-	6	-
90	-	-	-	-	-	2	-
120	-	-	-	-	-	2	-
Total number of cases	8	28	9	9	12	10	4
Average number of days ± standard digression	25.00 ± 5.35	28.21 ± 8.63	24.44 ± 5.27	52.00 ± 9.19	50.00 ± 0	78.00 ± 25.30	42.00 ± 5.00

Erythema spots and erosio are healing in approximately equally periods (there is no significant difference) ( $p > 0.05$ ). Soft-tissue infiltrates (STI) possess a longer period of healing, in average  $42.00 \pm 5.00$  days, and compared to erythema, bullae and erosion the period is statistically longer ( $p < 0.001$ ). Much longer period of healing than STI have ulcer (52 days) and necrosis III degree (50 days) ( $p < 0.05$ ). Most longer heal necrosis IV degree ( $78.00 \pm 25.30$  days), they statistically distinguish from necrosis III degree and ulcer ( $p < 0.001$ ). Our results show a faster period of healing when skin lesions have been medically treated then left to heal spontaneously. In the beginning of our investigation we established through telephone inquiry that by patients, who got skin lesions after poisoning and treated themselves at home, the time of healing was 6-10 months (240-300 days).

On the basis of these results we worked out a "Model for prevention and treatment of skin lesions in drug induced coma". Its realization is possible under the management of specialist-toxicologist with supportive care of a surgeon, physiotherapist, dermatologist and ophthalmologist.

1. Detoxic-depuration treatment of acute poisoning. Realization of the treatment in full content and in maximum short terms.

2. Prevention: Nurses' care: Two times a day to examine the body, particularly places under bone and fixed devices (they must be loosely). The body, folded in an angle, must be turned 3-4 times to right and to left, avoiding lifting up the head more than  $30^\circ$ ; Skin wash with water and drying with talc, without massaging. Lifting up the legs, leaned on shanks. Don't put rings under heel and sacrum, because they reduce the blood to the center of the lesion.

2. Elimination of pressure and trauma: klinetronic bed, antidecubital mattress.

3. Correction of the hypoproteinemia: infusion of plasma; protein nutrition after comma, vitamins, minerals (when they are insufficient).

4. Local treatment. A. Treatment of erythema spots: Every day fat dressing with cortisone or moist dressing with rivanol or serum physiologicum. The dressing must be moist all the time. Don't leave the dressing to dry!; Physiotherapeutical methods: helium-neon laser, magnetic field – 10 days with moist or fat dressing, but skin must be cleaned before the physiotherapeutical procedure. B. Treatment of bullae: Excision of the bullae's roof; Every day fat dressing with cortisone or moist dressing with jodasept, flamasin; Physiotherapeutical methods- helium-neon laser, magnetic field – 10 days with daily applied dressings; Bullae on the conjunctivas- the eyelid to be covered with moist compress with serum physiologicum or unguentum antisepticum, further treatment together with an ophthalmologist. C. Treatment of erosion: Every day fat dressing with cortisone or moist dressing with jodasept, flamasin; Physiotherapeutical methods- helium-neon laser, magnetic field – 10 days with daily applied moist, antiseptic or fat dressings. D. Treatment of ulcer: Every day fat dressing with cortisone or moist dressing with jodasept, flamasin; Physiotherapeutical methods- helium-neon laser, magnetic field – 10 days with moist or fat dressings. E. Treatment of superficial necrosis (necrosis over the muscle fascia). Enzyme necrectomia with 40% acidi bensoici, iruxol until demarcation line appears or surgery necrectomia; Physiotherapeutical methods- helium-neon laser, magnetic field – 10 days with dressing. Only after full removal of necrotic tissue (one, two or three series with 10 procedures each, at intervals of 15 days). F. Treatment of deep necrosis

(necrosis under the muscle fascia). Surgery necrectomia two-three times weekly or enzyme necrectomia. Physiotherapeutical methods- helium-neon laser, magnetic field – 10 days with moist or fat dressing only after full removal of necrotic tissue. Repeat this procedure 3-4 times after 20 -30 days; Skin-muscle plastic. G. Treatment of soft tissue infiltrates: Physiotherapeutical methods- helium-neon laser, magnetic field, diadynamic electricity (Bernard's current). Every day fat dressing with cortisone or moist dressing with jodasept, flamasin.

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