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CASE REPORT

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Suicide by Intravenous Injection of a Veterinary Euthanasia Agent: Report of a Case and Toxicologic Studies

Suicide by the intravenous self-administration of an overdose of therapeutic drugs has been rarely reported in the literature. All such cases to date have involved the use of short-acting barbiturates normally used in the induction of anesthesia; the victims have been either medical or paramedical personnel [*1–3*]. To our knowledge, the present case represents the first report of the suicidal intravenous self-administration of a veterinary euthanasia agent.

Report of a Case

The deceased, a 20-year-old white male, a veterinary assistant, was discovered in a veterinary surgical preparation area by a staff veterinarian who was making morning rounds. The victim had been seen entering his place of employment at approximately 3 p.m. the previous day. When discovered at 9 a.m. the following day, the body was lying facedown on two neatly folded stacks of surgical towels, with the left arm hyperextended above the head. The right hand of the man clutched a 50-ml syringe; an intravenous line ran from the syringe to the left antecubital fossa. The body was turned on its left side at the time of discovery (Fig. 1). Removal of one stack of towels revealed the syringe firmly supported in a floor drain grid plate, with the intravenous line threaded between holes in the grid plate and attached to the syringe (Fig. 2). Approximately 9 ml of a bluish liquid remained in the syringe. The intravenous line had been firmly taped in place with adhesive tape, and the decedent's entire forearm had been painted with a surgical adhesive.

Livor mortis was observed in the face, anterior chest, and right hand. At the base of his right thumb, overlying the thenar eminence, there was a circular depression crossed by horizontal lines. These lines corresponded exactly to the molded pattern of the syringe plunger base. In addition, a small white line crossed the area of lividity in the distal phalanx of the right thumb. This line matched the rim on the plunger of the syringe (Fig. 3).

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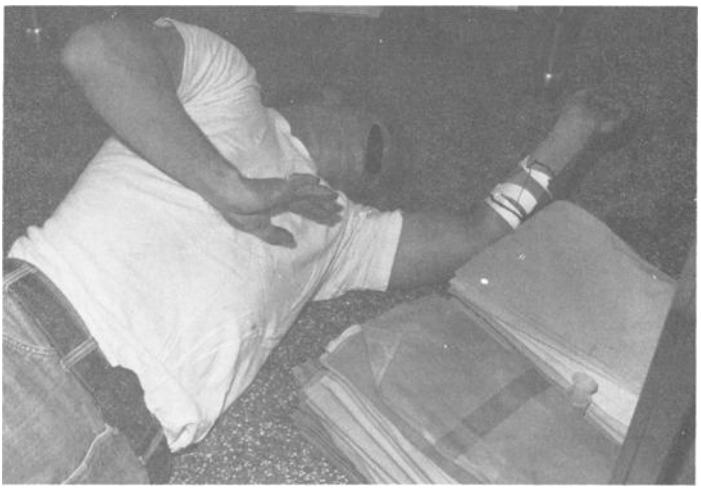

FIG. 1—*Body on floor at scene. Note clutched position of right hand and intravenous line taped in left antecubital fossa.*

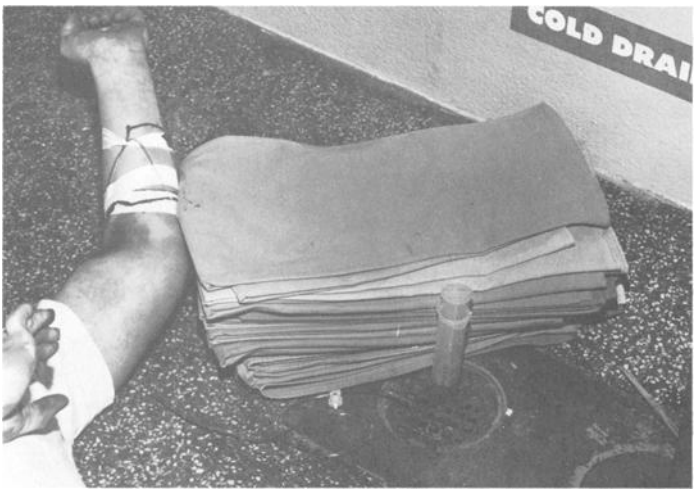

FIG. 2—*One stack of towels has been removed, revealing syringe in place in floor drain grid plate. Note large area of discoloration in left antecubital fossa.*

In the left antecubital fossa, surrounding the area of needle placement, was an area of intense erythema, measuring 10 by 8 cm. Overlying the median antecubital vein were two bullae, each measuring 0.5 cm in diameter. Histologic examination of the area showed a lack of vital reaction, indicating that the tissue damage had occurred postmortem (Fig. 4). Gross and microscopic findings of the postmortem examination were those of intense acute congestion of all organs.

Routine screening for drugs by ultraviolet spectroscopy detected barbiturates in extracts of blood, urine, and vitreous humor, as well as in tissue homogenates of brain, liver, and kidney [*4*]. High concentrations of barbiturates were observed in all extracts and the

FIG. 3—*Detailed view of right hand with pattern injuries. Note line corresponding to rim of syringe plunger causing blanching of livor in thumb* (arrow). *A circular area on the thenar eminence duplicates the pattern seen on the syringe plunger.*

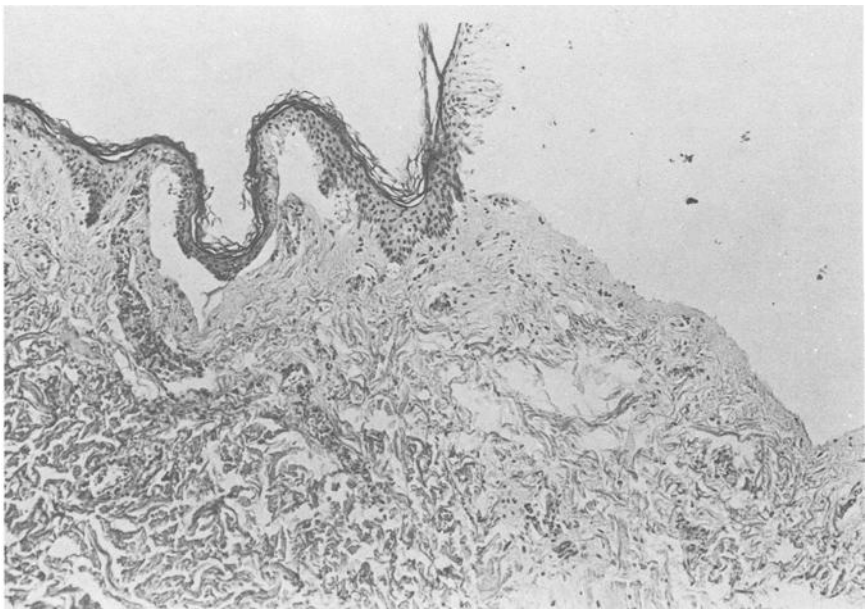

FIG. 4—*Section of skin from discolored area in left antecubital fossa. A bulla is seen in the right half of the figure. No inflammatory reaction is seen, indicating the postmortem nature of the injury (hematoxylin and eosin; magnification,* ×75).

constituent barbiturates were identified by gas-liquid chromatography (GLC) (Table 1). Isopropanol was also detected in tissue from the injection site by means of GLC. No other drugs were detected by ultraviolet spectroscopy or GLC.

The GLC comparison of residual material in the syringe, with a bottle found at the scene, identified the material as "Lethal" (Eli Lily Co.), a veterinary euthanasia agent.

TABLE 1—*Concentrations of barbiturates.*

Specimens for Analysis	Amobarbital	Pentobarbital
	mg/dl or mg/dg	
Blood	0.2	4.5
Brain	0.2	4.8
Kidney	0.5	2.6
Liver	0.2	2.0
Vitreous humor	...	2.0
Tissue from injection site	0.1	0.4
Urine	none detected	none detected
Gastric contents	none detected	none detected

The composition of this agent is pentobarbital, 26 g; amobarbital, 13 g; isopropanol, 20 ml; polyethlene glycol-200, 10 ml; and a sufficient quantity of distilled water to make 100 ml.

An extensive background investigation by investigative authorities, as well as a check of the decedent's health record, failed to reveal a history of previous suicidal attempts or any mention of emotional problems.

Discussion

Previously reported cases of suicide by intravenous barbiturates, as well as two other unusual cases [*5,6*], are compared in Table 2. All decedents were either medical or paramedical personnel and familiar with the drugs and the routes of administration used for their suicides.

Lethal is used in veterinary euthanasia at an intravenous dose of 1 ml per 5 kg (10 lbs) body weight. Unconsciousness usually occurs during injection and death supervenes within a matter of seconds. The decedent in the present case weighed 90 kg (200 lbs) and had injected at least 40 ml of the drug, approximately twice the recommended lethal dose.

There appears to be little doubt of the victim's suicidal intent, since he had used Lethal in his daily occupational duties. Additionally, the physical configuration of the supports devised to hold the syringe was quite stable, and injection stopped only when the decedent's hand came to rest upon the towels. To our knowledge, the present case represents the only one of its kind in the literature.

Summary

Recently, we have investigated a case where a veterinary assistant was discovered in a veterinary surgical suite with an intravenous catheter in his left median antecubital vein. The catheter, attached to a 50-ml syringe, was firmly secured in an elaborate apparatus, consisting of stacked surgical towels surrounding a floor drain plate that supported the barrel of the syringe. Postmortem toxicologic analyses were performed on blood, liver, brain, kidney, urine, gastric contents, tissue from the injection site, vitreous humor, and residual liquid in the syringe. High concentrations of barbiturates were detected in all samples. Spectrographic comparison of the residual material in the syringe, with a container found at the scene, confirmed the presence of Lethal, a veterinary euthanasia agent. The present case is compared with similar cases in the literature.

TABLE 2—*Case comparison study of suicides by barbiturates.*

Author	Age	Sex	Occupation	Barbiturate	Intended Use	Route of Administration	Blood Barbiturate Level mg/100 ml
Bruce et al, 1977 [*1*]	middle age	m	anesthesiologist	thiopentone	anesthesia	intravenous	0.6
Backer et al, 1975 [*2*]	22	m	paramedic	thiopentone	anesthesia	intravenous	28.0
Noirfalise, 1978 [*3*]	24	f	nurse	thiopentone	anesthesia	intravenous	0.92
Winek et al, 1969 [*5*]	43	f	nurse	thiopentone	anesthesia	rectal	1.4
Poklis and Hameli, 1975 [*6*]	53	m	veterinarian	pentobarbital (Toxital)	euthanasia	oral	15.0
Present case	20	m	veterinary assistant	pentobarbital and amobarbital (Lethal)	euthanasia	intravenous	4.7

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