TECHNICAL NOTE

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Morphine in Lymph Nodes of Heroin Users

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ABSTRACT: During the autopsy of heroin users, the most consistent morphologic finding is the enlargement of hepatic lymph nodes. Nodes from seven heroin addicts were analyzed for morphine and a concentration range of 0.02 to 0.87 mg/100 g was found. Morphine was detected in all of the nodes examined and the concentration was generally higher than that in the blood.

KEYWORDS: pathology and biology, lymph nodes, morphine, heroin

Morphologic changes observed in autopsies of heroin users vary greatly, such as passive congestion of visceral organs, pulmonary embolism caused by the use of impure heroin, bacterial endocarditis, mycotic embolism caused by contaminated needles and syringes, hepatosplenomegaly, and enlargement of hepatic and auxiliary lymph nodes. Although none of these changes is considered to be specific, the most consistent finding is the enlargement of lymph nodes. This hyperplasia was noted earlier by Siegel et al [*1*] and then by Wetli et al [*2*] and was attributed mainly to viral infection or injection of particulate material, or both.

There are now a number of sensitive methods available for analysis of morphine in small specimens of tissue material. The purpose of this note is to present results from the analyses of enlarged lymph nodes collected from seven selected cases, using a gas chromatographic procedure.

Method

All of the enlarged hepatic lymph nodes analyzed in this study were removed during the autopsy of cadavers of known addicts or of individuals who died from suspected heroin use. The method for the determination of morphine in the nodes was that described by Nakamura and Way [*3*] for liver and kidney. Four grams of tissue were used for the analyses. Since morphine appeared to be conjugated, the tissue specimens were acid-hydrolyzed before the analyses; thus, total morphine concentration was reported for each specimen.

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TABLE 1—*The concentration of morphine in blood, bile, and lymph nodes in fatalities involving heroin.*

Case	Age	Sex	Morphine[a] Blood, mg/100 mL	Bile, mg/100 mL	Lymph Node, mg/100 g	Other Drugs in Blood,[a] mg/100 mL
1	23	M	0.006	nd	0.87	nd
2	34	M	0.14	nd	0.02	nd
3	19	F	0.008	4.29	0.12	seco-amo, 0.5
4	19	M	nd	4.57	0.13	nd
5	23	M	nd	7.94	0.18	pento, 0.6
6	23	M	nd	nd	0.03	seco-amo, 0.4
7	20	F	0.068	0.96	0.17	nd

[a]nd = not detected; seco-amo = secobarbital-amobarbital; pento = pentobarbital.

Results and Discussion

The results of toxicological analyses are shown in Table 1. All of the subjects were between the ages of 20 and 34; five of the decedents were male while the other two were female.

Morphine was detected in the nodes from all seven deceased. In all but one case, the nodes had higher morphine concentrations than the blood. In Case 6, the morphine was detected in the node when none was found in the blood or bile. These toxicological findings indicated that node analysis can be useful in evaluating fatal narcotism. In the course of its disposition in the body, morphine seems to be drained not only through the biliary duct system, but also through the lymphatic system in the liver to the perihepatic nodes. Whether the enlargement of the lymph nodes in these cases can be wholly or partly attributed to the presence of morphine or particulates associated with illicit heroin is still an interesting conjecture.

References

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