

Letters to the Editor

Discussion of "Pitfalls in the Diagnosis of Drug Smuggler's Abdomen"

Sir:

The paper by Karhunen et al. [1] describes the well-known problem of the use of abdominal X-ray for the diagnosis of narcotics "body-packing" [2-4]. Authors indicate that their cases included mostly drug users who had swallowed handmade packages which are easier to be seen than machine-made packets [3].

In those cases in which X-ray diagnosis was used, Karhunen et al. indicate that the sensitivity on Day 1 on their series (true positive/true positive + false negative) was 9/10. They also indicate that the specificity obtained on Day 1 was impossible to determine according to the absence of data on the true number of false negative findings in their series [1].

We also had the opportunity to assess the diagnosis of drug ingestion on cocaine bodypackers [5,6]. We concluded that a water-soluble contrast compound given orally was an efficient method for diagnosis and followup of drug body-packers [5]. We have proposed complementary methods of detection including drug detection in the urine [7] and contrast study of the bowel [5,6] when false negatives may occur. Following these methods, we obtained on a series of cocaine machine-made packets smugglers a sensitivity of 66/71 and a specificity of 41/46 for 117 abdominal contrast views performed on Days 1, 2, and 3 of the study [5].

Moreover, two thirds of the patients had ingested a constipative agent which is a problem pointed out by Karhunen et al. in their paper. That is another reason why we are grateful to these authors to stress the difficult problem of the diagnosis of drug smuggling and to confirm the interest of the methods we described for the safe and efficient nonsurgical management of drug body-packers [5].

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Authors' Response

Dear Sir:

We are grateful to Dr. Marc and his colleagues for their comments. We have had no experience with the use of the water-soluble contrast medium advocated by Marc et al. [1]. Their article, which was published after the submission of our manuscript, excellently highlights the problems with accuracy of X-ray diagnosis of drug smuggling. The main purpose of their study was to improve diagnostics to decrease the number of false negatives. We focused on explaining the reasons for false positives. Using their X-ray method, Marc et al. [1] reported 1 false positive of their 23 nonsurgically managed cocaine body-packers, but do not propose the reason for this error. Thus, although contrast study of the bowel has advantages over plain film, it might be of minor benefit in distinguishing between constipation and drug packs. Nevertheless, we agree that contrast study of the bowel should be included in the examination schedule of suspected body-packers, especially in cases with a strong suspicion and negative or doubtful findings in plain film.

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Discussion of "Cerebral Tissue Embolization due to Head Trauma: A Case Report with Immunohistochemical Confirmation"

Dear Sir:

I was intrigued by the article in the May 1991 issue of the *Journal* [1] concerning cerebral tissue pulmonary embolization following head trauma. It reminded me of a case that I had years ago in which pulmonary embolization of cerebral tissue occurred following a .22-calibre gunshot wound of the head. At the time I was surprised enough by the lung findings to take photomicrographs but assumed that it was not all that rare an occurrence. However, this case remains unique in my own busy forensic science practice. The interest

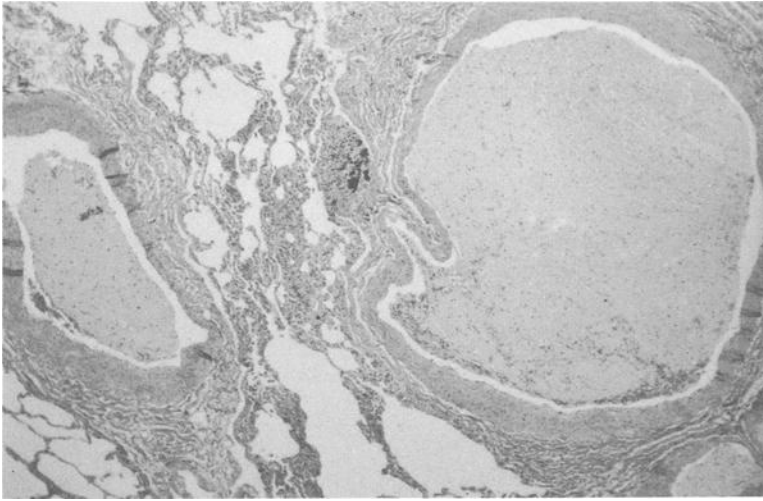


FIG. 1—Lung section with nonadherent cerebral tissue emboli within two pulmonary arteries (stain, hematoxylin, phloxine-saffron, $\times 40$).

of the case, however, is that it tends to support the belief of the authors of the recent report in the *Journal*, as well as the other authors that they quote, that rupture of a large venous sinus is not necessary for embolization to occur.

The victim was shot twice from across a room. One .22-calibre bullet lodged in the muscle and soft tissues at the nape of the neck while the other struck the top of the head at an acute angle of 20 to 30° 2.25 cm to the right of the mid-sagittal line, perforated the skull producing a typical "keyhole" entry wound, passed through the medial aspect of the right cerebral hemisphere, and crossed the midline perforating the falx cerebri below the superior sagittal sinus. It then passed through the left cerebral hemisphere hitting the inside of the skull in the left parietal region and slid down to enter the left temporal lobe. There was neither subdural nor extradural hemorrhage and no dural sinus was lacerated.

The victim survived approximately 9 h. At postmortem, several nonadherent cerebral tissue emboli were easily identified microscopically in the pulmonary arteries (Fig. 1).

One must assume that, contrary to the view of Bohm et al. [2], that the cerebral tissue entered the venous circulation through the cerebral or meningeal veins.

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References

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Author's Response

Dear Sir:

Thank you for the opportunity to respond to Dr. King's letter. I agree wholeheartedly with him that rupture of a large venous sinus is not a prerequisite for brain tissue pulmonary embolization to occur. At this institution alone within the last several months, we have seen three cases, two in closed head injuries as a result of motor vehicle collisions, and one in penetrating trauma as a result of a gunshot wound. In none of these cases did laceration of a large venous sinus occur. This experience further substantiates our and Dr. King's assertion that the cerebral tissue may enter the venous circulation through smaller cerebral or meningeal veins.

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Discussion of "Haptoglobin Typing in Canine Bloods"

Dear Sir:

I would like to call your attention to an unfortunate use of a biological term on p. 1562, third line from bottom, in your Vol. 36, 1991 issue [1].

The authors use the term "species" apparently referring to different canine breeds. This controverts the known fact that all breeds of dogs are freely interfertile. It is difficult to understand this, since elsewhere, even in the same paragraph, they use the term "breed."

It is true that visible differences between dog breeds are in some cases more marked than between natural species. However, this is due to intensive selective breeding on the basis of those same visible characteristics, and, as expected, it is not reflected by differences in nonvisible characteristics, which have become differentiated only slightly as a result of isolation and inbreeding of the different populations.

If a biological term is to be used for these distinctions, "subspecies" or "race" (which are used interchangeably by biologists) would be more appropriate; but in view of the peculiar nature of the differences produced by artificial selection, I think it would be better to stick to the layman's term "breed." We anthropologists have enough trouble getting people to understand what "race" does and does not mean, without having confusion added even indirectly.

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Author's Response

Dear Sir:

Dr. Brues is correct in pointing out our misuse of the term "species" on p. 1562, third line from the bottom. This was an unfortunate oversight by both myself and my colleagues. Certainly, "breed" is the appropriate term to use in this context. We stand corrected.

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The Stability of Aqueous Ethanol Solutions After 13 Years Storage

Dear Sir:

Aqueous ethanol solutions are commonly used to calibrate and check breath-ethanol testing instruments. Dubowski and Dubowski and Essary have published studies on the stability of the aqueous ethanol solution in simulators as tests are conducted on various breath ethanol testing devices [1,2]. However, only one published study has examined the long-term stability of aqueous ethanol solutions [3]. In this study, by Pella and Diamondstone, there was no significant change in the initial aqueous ethanol concentration of 60.17 mg/mL when the solutions were stored in sealed glass ampoules for a period of two years.

Recently, I determined the ethanol concentration of aqueous ethanol simulator solutions that had been manufactured in March 1978. The simulator solutions were stored in a cupboard at room temperature in four sealed 500-mL polyethylene bottles. The initial ethanol concentration of these solutions was labelled as 0.847 mg/mL. Thirteen and one half years later, the ethanol concentration as determined by headspace gas chromatography was 0.66, 0.68, 0.73, and 0.74 mg/mL, respectively. Over that period of time, the ethanol concentration had decreased by 0.11 to 0.19 mg/mL (13 to 22%).

No other volatiles such as acetaldehyde, which may be indicative of microbial activity, were detected [4,5].

If the decrease of ethanol in these solutions was uniform, the rate of decrease was from 1 to 1.6% per year.

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Calcium Alginate Swabs

Dear Sir:

Our laboratory recently received evidence in a rape/homicide case for deoxyribonucleic acid (DNA) testing which presented us with a serious technical blockage to successful DNA extraction.

The Sexual Assault Evidence Collection Kit used by medical personnel throughout the state of North Carolina contains sterile cotton-tip swabs for the collection of body fluids from various body cavities. The medical examiner in this case used our Sexual Assault Evidence Collection Kit and very wisely chose to collect additional vaginal and anal swabs to ensure that the laboratory would have an adequate sample with which to work. The swabs he used to collect the additional evidence were a particular brand known as "Calgi-Swabs."

"Calgi-Swabs" are often used for the collection of specimens from the nasopharyngeal tract and also for microbiological culture transfer. The applicator tip is formed from calcium alginate, a natural plant fiber extracted from seaweed. The manufacturing process involves mechanical damage to the seaweed to form a crude extract to which calcium ions are added. This process does not attempt to remove any of the plant DNA present nor any of the natural polysaccharides (Steve Davis, personal communication).

In our laboratory, we follow the DNA extraction procedure developed by the FBI [1] with only slight modifications. When one attempts to extract DNA from a calcium alginate swab, the swab dissolves in the extraction buffer resulting in the formation of a thick, viscous, gelatinous material. The solution was so thick that it was not possible to pellet out the sperm fraction after the extraction of the female DNA. In addition, the presence of plant DNA in the swab made quantitation of the DNA very difficult.

Fortunately, we were able to return to the remaining evidence and locate additional cotton swabs taken from both the anal and vaginal cavities. The cotton swabs posed no technical problems to extraction.

In our attempt to discover the reason the swabs had dissolved, we contacted several other DNA-typing laboratories across the United States and located several individuals who had noted a similar problem before but were not aware of its cause. We felt other forensic DNA analysts might benefit from this information, and more importantly, medical personnel should be made aware of the problem posed by using calcium alginate swabs to collect forensic science evidence.

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Reference

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Fingerprint Detection Research

Dear Sir:

With the advent of automated fingerprint identification systems (AFIS) (some 60 are currently in operation in the United States), cold searching has become a reality. Fin-

gerprint evidence is thus more valuable than ever, and it is the physical evidence of the generally highest probative value one can introduce in court. Deoxyribonucleic acid (DNA) profiling promises to be of similar scope but issues of standardization and reliability have yet to be settled, and no database akin to fingerprint files exists. Fingerprints will therefore retain their unique status for quite some time to come. Since the success of AFIS is intimately linked to one's ability to detect latent prints on articles of evidence to begin with, one would think that research on improved detection techniques would be vigorous in the United States. Such is not the case. The National Institute of Justice (NIJ), the only granting agency in the United States with the explicit mission of supporting criminalistics research, only once took a foray into the field via a three-year grant to Texas Tech University. Although very promising results were achieved (see, for instance, *Journal of Forensic Sciences*, Vol. 35, No. 1, Jan. 1990, pp. 35-45), NIJ elected to discontinue further support of this work. The Texas Tech research program is now being phased out. A modest research program at the University of Pennsylvania on synthesis of ninhydrin analogs is supported by the Secret Service. It remains to be seen how long this program will survive. Beyond that, no research activity to speak of on latent print detection exists in the United States. Unless the fingerprint community becomes more active in promoting research in its field, we will continue to have to await advances made by forensic scientists from other countries, as has usually been the case in the past. This is a sorry state of affairs, especially in a country that suffers from the worst crime problem by far among the industrialized nations.

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