Correspondence

Commentary on Strom, CM, Rechitsky S. Use of nested PCR to identify charred human remains and minute amounts of blood. J Forensic Sci 1998 May;43(3):696–700.

Sir:

On the basis of genotyping at two loci in "a single pink spot on a garage wall" and otherwise unidentifiable charred remains, this paper reports "a 98% probability" that the spot came from the wife of a man accused of murdering his wife, then burning her body in a steel drum in his garage. However, it is not clear (to this reader, at least) how the 98% figure was obtained. The authors mention a "Chi squared test," but that cannot give rise to such a statistic. They also report a "probability of exclusion of 0.52288" for the VWF locus and a "probability of exclusion of 0.6827" for the Apo-B locus, and conclude that "[s]ince both the blood and tissue samples were identified as female, a final observed probability of 1.2% and a predicted probability of 0.36% were presented to the judge." Presumably, the last two figures have to do with the frequency of the observed genotype in the authors' database, and with the frequency expected in an infinite, randomly mating population, respectively. I would further guess that the 98% figure is a posterior probability obtained by considering the genotypes of the wife's parents (given in the case report) and assuming that, exclusive of the genetic information, the probability that the pink spot on the wall came from the wife on one-half.

Considering the aversion to posterior probabilities in criminal cases displayed by some courts in the United Kingdom and in certain U.S. jurisdictions, I would be interested in learning how the 98% figure was derived and whether it was presented to the trial court.

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Author's Response

Sir:

The Chi square analysis were performed to determine if the observed genotypes in the control populations differ significantly from the expected genotypes predicted from the individual allele frequencies. This is a general approach to validating a new system of DNA identification. The Chi squared results demonstrated that the observed genotype frequencies did not differ significantly from the expected frequencies.

The "probability of exclusion" or P(exc) is calculated for each

probe using the computer program described by Ohno et al (1). The P(exc) for each individual probe is the probability that a true non-father will actually be excluded by a test using that probe. These values are independent of the actual case in question and are a measurement of the power of the probe systems in use. We currently have 5 nested PCR systems usable for a single cell analysis. However, since this is a case of "reverse paternity testing" it is not clear how these numbers would be applied formally for this case.

The figure of 98% was arrived at as follows. Basically two separate proceses were utilized. In the first method, the "product rule" was used to calculate the predicted frequency of individuals in the population who have genotypes that would not exclude them from being the child of this couple. Secondly the data base was queried as to the actual observed frequency of individuals in the data base who could not be exluded from being the child of this couple. Both calculations resulted in a similar conclusion; that 2.4% of random individuals would not be excluded from being the child of this couple. Since the DNA was female and the subject was a female, a final pronouncement was made that only 1.2% of random individuals in the population would not be excluded from being the daughter of this couple. This is not a probability of paternity and no posterior probability was used.

Reference

1. Ohno Y, Sebetan I, Akahashi S. A simple method for calculating the probability of excluding paternity with any number of codominant alleles. Forensic Science International 1982;19:93–98.

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Erratum/Correction of Mesmer MZ, Satzger RD. Determination of gamma-hydroxybutyrate (GHB) and gamma-butyrolactone (GBL) by HPLC/UV-VIS spectrophotometry and HPLC/thermospray mass spectrometry. J Forensic Sci 1998 May;43(3): 489–492

Sir:
The last sentence of the Results and Discussion section of the above-captioned paper, beginning "In the Forensic Chemistry Center, additional spectral information. . . ." should be corrected to read as follows: Additional spectral information can be obtained by Fourier transform infrared spectroscopy (FTIR). However, the sample presented to the instrument must be relatively pure. If the sample is a mixture of GHB and GBL, as is sometimes the case,

FTIR gives a mixture spectrum which can be difficult to interpret, depending on the relative amounts of each component.

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Editor's Note: Any and all future citations of the above-referenced paper should read: Mesmer MZ, Satzger RD. Determination of gamma-hydroxybutyrate (GHB) and gamma-butyrolactone (GBL) by HPLC/UV-VIS spectrophotometry and HPLC/thermospray mass spectrometry. [published erratum appears in J Forensic Sci 1998 Nov; 43(6)] J Forensic Sci 1998 May;43(3): 489–492.

Could a Selective Serotonin Reuptake Inhibitor (SSRI) Incite Someone to (Attempt) Murder?

Sir:

I was asked to give evidence in two SSRI-murder cases. A general practitioner (GP) prescribed to a 40-year-old asthmatic with depressions paroxetine 20 mg/d. After the first tablet the patient mentioned "he felt something change inside." He still felt depressive and started to show compulsive behavior such as constantly walking around his apartment. After two days on paroxetine he started belching and vomiting. His GP advised him to halve the dose. The next days he deteriorated, still with compulsive behavior. He explained to the police that four days after starting with paroxetine, he was acting impassive like a wax figure, totally paralyzed. At a certain moment when his mother spoke to him, he strangled her, acting in some kind of trance. He cannot believe he killed her without reason and does not understand why. He loved his mother and never had the urge to kill someone before.

Some time before another man on fluoxetine killed his wife also for no apparent reason. From so called "Prozac Survivors Support Groups" I received information about side effects and risks of SSRI's. To me this information seems a blazed version of facts and not scientifically founded. A literature search in Medline® showed hardly any useful articles. Some patients on SSRI had increasing symptoms of physical aggression during the first weeks (1,2).

SSRI's have been blamed for causing violent behavior in depressed patients (3). As SSRI's have already been prescribed for many millions of patients a possible "murderous side effect" has to be very rare (4).

I asked in vain for information about violence or murder under influence of SSRI to members of The International Association of Forensic Toxicologists.

I sincerely hope readers will send me any useful objective information about this sensitive subject.

References

1. Constantino JN et al. Effects of serotonin reuptake inhibitors on aggressive behavior in psychiatrically hospitalized adolescents: results of an open trial J Child Adolesc Psychopharmacol 1997;7: 31–44.
2. Adverse Drug Reaction Advisory Committee. Selective serotonin reuptake inhibitors and SIADH. Med J Aust 1996;164:562.
3. Fluoxetine, suicide and aggression. Drug Therap Bull 1992;30/2: 5–6.
4. Edwards JG et al. Drug Safety Monitoring of 12,692 Patients Treated with Fluoxetine. Hum Psychopharmacol Clin Exp 1997; 12:127–137.

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Erratum

Erratum of Shigetoshi Kage, Shinji Ito, Tetsuko Kishida, Keiko Kudo, and Noriaki Ikeda. A fatal case of hydrogen sulfide poisoning in a geothermal power plant. J Forensic Sci 1998;43(4): 908–910.

Please note that for the above mentioned paper, all μM/mL or g should have been μmol/mL or g.