Case Reading

Detection of Curare in the Jascalevich Murder Trial

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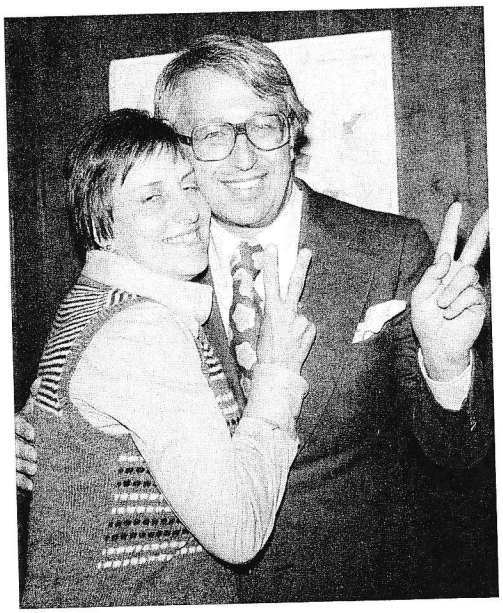

Dr. Mario E. Jascalevich and his wife Nora display the "V for Victory" sign at their attorney's office in Hackensack, NJ. *Courtesy AP Wide World Photos*

The case of *State* v. *Jascalevich* that follows preceded the *Daubert* ruling by fifteen years. Nevertheless, it is interesting to note that the trial judge, after listening to both sides in his "gatekeeping" role, admitted into testimony what in 1978 were rather novel scientific test procedures for the drug curare. The case offers an excellent example of the legal and scientific issues involved in assessing the admissibility and value of scientific evidence in the courtroom. Dr. Jascalevich was accused of murdering several of his patients by administering lethal doses of curare. The issue of whether the curare was detected and identified in the exhumed bodies of the alleged murder victims was central to proving the state's case against the defendant. What ensued at the trial was a classic illustration of conflicting expert testimony on both sides of a scientific issue. Ultimately, the jury's task was to weigh the data and arguments presented by both sides and to reach a verdict.

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The murder trial of Dr. Mario E. Jascalevich was one of the most complicated criminal proceedings ever tried in an American courtroom. The 34-week trial before a Superior Court judge in New Jersey resulted in a not-guilty verdict for the Englewood Cliffs, N.J., surgeon. The questions concerning analytical chemistry raised in the trial will continue to be discussed in years to come.

Not since the controversial trial of Dr. Carl Coppolino—convicted in a Florida courtroom in 1967 of murdering his wife with succinylcholine chloride—have so many forensic experts of national and international stature labored so long over the scientific questions at issue in the case:

> What happens to human tissue embalmed and interred for a decade? Assuming lethal doses of a drug such as curare were given to hospital patients, would the drug have changed chemically or have been destroyed entirely over a 10-year period?
>
> Assuming again that the drug had been injected, what analytical techniques could be employed to trace submicrogram amounts of it?
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> Could components of embalming fluids or bacteria in the earth react chemically, forming substances giving a false positive reading in the analytical procedures used?

Forensic scientists first grappled with these questions during the latter part of 1966. Two of Jascalevich's colleagues at Riverdell Hospital in Oradell, N.J.—Dr. Stanley Harris, a surgeon, and

Dr. Allan Lans, an osteopathic physician—suspected him of murdering their patients with curare. There were no eyewitnesses to the alleged murders, but Drs. Harris and Lans discovered 18 vials of curare in Jascalevich's surgical locker after breaking into it.

They took their suspicions to the Bergen County Prosecutor's office in November 1966, and a brief but unpublicized investigation was launched. Items taken from the surgeon's locker, including the vials of curare and syringes, were sent for analysis at the New York City Medical Examiner's office.

In the interim, Jascalevich told authorities he used the muscle-relaxant drug in animal experiments at the Seton Hall Medical College. The surgeon presented the prosecutor his medical research papers and other documentation to support his contention. In addition, he reviewed the medical charts of the alleged murder victims and told the prosecutor there was no need for the operations the patients received. Malpractice and misdiagnosis were the causes of the deaths, Jascalevich stated at that time. Dr. Milton Helpern, chief of the New York City Medical Examiner's office, and his staff in early 1967 concluded their testing on the items taken from Jascalevich's locker. Dog hair and animal blood were detected on the vials of curare and syringes.

The prosecutor's office terminated its investigation and stated there were more reasons to look into allegations of malpractice than murder at the small osteopathic hospital.

In January 1976 a series of articles about a "Doctor X" suspected of murdering patients at Riverdell Hospital appeared in the *New York Times*, and the Bergen County Prosecutor's office reopened its case.

A month prior to the case being officially reopened, however, New York Deputy Medical Examiner Dr. Michael Baden supplied an affidavit to the Superior Court in Bergen County stating that at least a score of patients who died at Riverdell in 1966 succumbed from other reasons than those stated on death certificates.

A Superior Court judge signed the order in January 1976, granting the prosecutor's office the right to exhume the bodies of Nancy Savino, 4; Emma Arzt, 70; Frank Biggs, 59; Margaret Henderson, 27; and Carl Rohrbeck, 73.

All these patients entered Riverdell Hospital between December 1965 and September 1966 for routine surgical procedures and succumbed days afterward.

In mid-January 1976 the body of the Savino child was exhumed from a gravesite in Bergen County and taken to the medical examiner's office in New York City.

There, Dr. Baden, in the presence of New Jersey State Medical Examiner Dr. Edwin Albano and others, began performing the almost 4-hour examination of the child's body, which was said to be well preserved.

On May 18, 1976, Dr. Jascalevich was indicted for five murders.

A little more than a year later, the state's forensic experts began using radioimmunoassay (RIA) and high-performance liquid chromatography (HPLC) on the tissue specimens. In the fall of 1977, the defense received from Drs. Baden and Dal Cortivo samples of tissues and embalming fluids of the alleged murder victims.

For the remainder of the year, both the defense and the state experts worked to develop analytical procedures to settle the question of detection of curare in human tissue.

In addition, there were numerous pretrial hearings at which time the defense, headed by Jersey City attorney Raymond Brown, requested medical slides, reports, and patient charts relating to the alleged murder victims, as well as the methodologies used in treating the specimens.

On February 28, 1978, a panel of 18 jurors was chosen for what was to become the second longest criminal trial in the nation's history. At the outset, the defense

wanted a hearing to ascertain the validity of the scientific procedures employed by the state to reportedly detect curare.

The defense contended that RIA and HPLC were relatively new procedures and could not be used to detect curare in human tissue. RIA, for example, could only be used to detect drugs in blood and body fluids, according to defense experts.

The defense motion for a hearing outside of the presence of the jury was denied by Superior Court Judge William J. Arnold, who maintained the motion could be made later in the trial when the evidence obtained by the analytical techniques would actually be scheduled for presentation to the jury.

The trial got underway with testimony by osteopathic physicians, nurses, and other hospital personnel employed by Riverdell during the time the alleged murders were committed. The physicians told Assistant Prosecutor Sybil Moses that in each instance the patient had been recovering from surgery when he succumbed.

However, on cross-examination, the physicians admitted they had misdiagnosed their patients' conditions and that there was inferior postoperative care. For example, in the case of the Savino child, the defense experts held that the little girl died of acute diffuse peritonitis—the source of her abdominal pain when she was brought into Riverdell after having been diagnosed as having acute appendicitis.

After the prosecution completed presentation of the medical aspects of its case, the defense renewed its request for a special hearing on the admissibility of the evidence obtained by radioimmunoassay, liquid chromatography, and other analytical techniques. This request came as Dr. Baden took the witness stand to explain why he had recommended reautopsy of the bodies. The prosecution was opposed to a hearing:

> The techniques used by the State are not new toxicological methodologies, but are standard methods, used widely throughout the field. These methodologies include radioimmunoassay and high-pressure liquid chromatography. . . .
>
> Since the methodologies used to detect the curare are widely accepted in the scientific community, there is no necessity for the Court to conduct a hearing as to their reliability.

Nevertheless, Judge Arnold ruled that a hearing should be held. Arguments began, in the absence of the jury, on June 10. Both sides presented statements by their technical experts and affidavits from other scientists regarding the validity of the analytical methods.

On June 20 the judge ruled that the analytical evidence was admissible. He stated,

> All I'm saying is under the law the evidence is admissible. I'm not going to comment on the value or trustworthiness of the witnesses [who testified]. The ultimate decision must be made by the jury.

Following this decision, the jury began listening to the scientific evidence, with the State's and the defense's witnesses in the process explaining such points as: What is curare, and specifically *d*-tubocurarine? What is radioimmunoassay? What is an antibody, and how is the antibody for *d*-tubocurarine created? What is high-pressure liquid chromatography?

Dr. Richard Coumbis testified about his finding tubocurarine in tissues from four of the five patients: "can only state there is presumptive evidence" that curare was discovered in the fifth patient. Under cross-examination by defense attorney Raymond Brown, Coumbis maintained that the RIA and HPLC procedures were valid methods of detecting curare because "on the basis of my personal experience, I did not find any other substance interfering with curare."

Dr. David Beggs of Hewlett-Packard then testified that he found curare in the Savino lung and liver samples using mass spectrometry. He said the Biggs and Arzt samples contained possible traces of

curare; however, he could not be scientifically certain of this. He stated that mass spectrometry "is not an absolute test" for curare, but "just indicated that it is probably there."

Dr. Leo Dal Cortivo then took the witness stand and testified that he had found curare in tissue remains of three of the patients using HPLC. He also had measured curare in vials found in the defendant's locker at Riverdell Hospital in 1966, which the defense contended had been used in animal experiments conducted by Jascalevich at the College of Medicine in Jersey City. It was necessary to use RIA for the detection of curare in the HPLC eluates.

The prosecution then completed its case. At this point Judge Arnold dismissed two counts of murder and stated that the prosecution had not presented scientific evidence for the presence of curare in the bodies of Emma Arzt and Margaret Henderson. The defense then began presentation of its case with testimony about the medical aspects.

In September, attention returned to the analytical data. Drs. Frederick Rieders and Bo Holmstedt testified about the experiments they carried out on the samples provided by the prosecution. The major question they addressed was that of the long-term stability of curare under the conditions to which the bodies were subjected between 1966 and 1976.

Dr. Rieders maintained that, in his opinion, the RIA was not specific enough and "could only raise suspicions that something is there but it might not be there." The only procedure he found specific enough to be confident of identification of curare was mass spectrometry, using the entire spectrum, not just selected ion monitoring.

Rieders tested for the stability of curare and found that both embalming fluids and tissue juices (from the patients) had destructive effects on this compound. He added curare to these liquids and could detect it by TLC initially, but after a few days could find no trace of it or other nitrogenous bases. These liquids altered curare chemically to the point where it was no longer recognizable as such. He concluded that the rapid rate of decomposition meant that to detect curare in the specimens in 1976 would have required huge, medically impossible amounts to have been present in 1966.

Rieders tested the samples for curare and found it only in the liver specimen of Nancy Savino. He stated that mass spectrometry indicated that the curare in this sample was highly pure and could not have been present in the ground for 10 years. Furthermore, if curare was present in the liver, it should also have been found in the child's muscle tissue. That it was not detected in the latter specimen was a "tremendous inconsistency."

Dr. Bo Holmstedt then stated that curare could not survive in embalmed bodies for 10 years, especially because of the effects of bacteria and repeated fluctuations in temperature of the bodies. He reviewed experiments which showed that curare, upon injection, shows levels of the same order of magnitude in liver and muscle tissues. After 10 minutes, "40 percent of the drug is to be found in the muscle and 3 percent in the liver."

On October 14 the defense rested its case. On October 23, after both sides had presented summations of their cases, Judge Arnold gave his charge to the jury. The next day, October 24, 1978—seven and a half months after the trial had begun—the jury received the case. After just over 2 hours of deliberations, the jury returned a unanimous verdict of not guilty on all three remaining counts of murder. Two years and five months after the indictments against him had been returned, Dr. Mario Jascalevich was free.