Emanuel Revici, MD:
Efforts to Publish the Clinical Findings of a Pioneer in Lipid-Based Cancer Therapy – Part 1
by Marcus A. Cohen

Dr. Emanuel Revici died during his 102nd year on January 9, 1998, after a career that bridged seven decades in the history of modern medicine. Since the 1980s, mainstream research has independently confirmed a number of his therapeutic breakthroughs.

He was the first physician to develop selenium compounds low enough in toxicity to give cancer patients doses far in excess of safety limits for ordinary forms of selenium. He was among the first research clinicians to treat cancer with naturally-derived Omega 3 fatty acids. He also appears to have pioneered in utilizing lipids to transport cytotoxic agents through the bloodstream to sites of abnormal tissue.

Still awaiting mainstream corroboration are numerous reports of patients with advanced cancer who obtained long-term remission under his treatment after failing to benefit from any other therapy.

New York's Office of Professional Medical Conduct (OPMC) revoked Revici's license to practice in 1993. The charges against him reduced to a sharp divergence in approach from conventional oncology practice. The state education department returned the license in late 1997. (In New York the health department - OPMC - revokes the licenses of physicians, the education department processes applications to restore them.) Governor George Pataki wrote a letter in support. NY Assemblyman Sheldon Silver, Speaker of the Assembly, issued a legislative resolution lauding Revici's accomplishments and devotion to patients.

The behind-the-scenes campaign to regain his license has droll and infuriating moments worth telling, but it is too long to relate here. This article, in several parts, concentrates on Revici's efforts to publish his findings, and on evaluations of his therapy. Extending back to World War II, the history of Revici's publications and evaluations exemplifies the problems most originators of non-standard approaches to cancer experience in seeking mainstream understanding and trials of their therapy.

Capsule Biography

Emanuel Revici, born September 6, 1896 in Romania, received his doctorate in medicine and surgery from the University of Bucharest in 1920. Teaching himself advanced chemistry in the mid-1920s, he became absorbed in exploring the relationship between lipids and cellular metabolism. Eager to further his investigations, he sampled the facilities available at the foremost European research centers, opting for Paris in 1936, where he pursued his studies at hospital clinics and laboratories directed by academic physicians.

Revici's Parisian years ended in March, 1941. The head of the Paris police department, a fast friend, warned him that he could no longer protect him from the German occupation forces rounding up the city's Jews. (Revici was Jewish.) Shortly after the warning, he fled to Nice and spent the next six months in southern France as a leader of the Resistance.

Revici had discovered a lipid substance that stanch bleeding within minutes, enabling wounded Underground fighters to avoid notice by the Gestapo, but the Gestapo soon tumbled onto its clandestine activities. Comrades in the Resistance spirited him overland into Portugal, and from there by sea to Casablanca, Morocco, where he boarded a ship carrying members of the Spanish Republican government - in exile after Generalissimo Franco's fascist regime controlled Spain. On the prowl in the North Atlantic, U-boats in the German "wolf pack" were raising their periscopes to sight the vessel, bent on torpedoing it.

The ship inched down the west coast of Africa, sailing at night without lights, then steamed across the southern Atlantic to the Bahamas, a voyage lasting two perilous months.

The Underground had entrusted to Revici a microfilm with information for the Allies. At the Portuguese border, guards had detained and searched him, and would have executed him on the spot had they discovered the film. Patting his body from heels to head, poking their fingers into every possible hiding place in his clothing, they never thought to pry apart the fingers of his upraised hands.

When the ship anchored in the Bahamas, Revici was the first passenger British intelligence officers debriefed. He delivered the microfilm, and also, unexpectedly, a roll of film showing the German submarine installations at Casablanca, snapped on his own (another impromptu act of daring, punishable upon discovery by summary execution). Revici then settled in Mexico City for the duration of the war.

In 1942, he converted a modern hotel in the Mexican capital into a medical institute. With over 100 rooms, it specialized in cancer, treating patients free. The idea and money came from a friend, Gaston Merry, formerly European representative of E.I. Du Pont de Nemours & Co, the chemical and pharmaceutical giant, headquartered in Wilmington, Delaware. Merry had tracked Revici's research in Paris, where their professional relationship had warmed into a deep friendship. After the fall of France, Merry requested reassignment by Du Pont to Central America, sharing a house with Revici and his family in Mexico City.

"Our Institute," recalled Revici in 1954, when the memory was vivid, "consisted of a clinic for outpatients, a hospital with all modern equipment, a Clinical Laboratory, a Research Department with eight laboratories, and a section for experimental research on animals. The staff...numbered 15 physicians and chemists in addition to a personnel of 60 which included nurses, helpers, and orderlies. The records were kept in Spanish."
Completing the picture, Revici noted: "Besides obtaining the services of competent Mexican physicians and scientists, we were fortunate in interesting several eminent physicians, surgeons, and scientists who were also refugees in Mexico City...who, after investigating my background and research, joined the Institute staff. The object of the Institute was to concentrate on following my line of research."

While still in Romania, Revici had patented a process for refining crude oil into a lubricant for airplane engines. "Revoil," as the product was known, yielded him royalties that had financed his travels and research in Europe. The war had interrupted the flow of these payments (Romania fought against the Allies), but they resumed just before the end. Revici repaid Merry, then the flow ceased permanently with the postwar Communist take-over of Romania. (The Communists nationalized the oil industry, expropriating the "Revoil" refineries.)

Dr. George Dick, dean of the Chicago University medical school, brought Revici to the US in 1946, promising him research facilities. Dick resigned suddenly the next year, and Revici promptly accepted an invitation from physicians, businessmen, and civic leaders to found an experimental cancer clinic in New York City. The clinic, named the Institute of Applied Biology (IAB), opened later in 1947. He earned his medical license in New York by examination in 1947, and maintained his dual career as a scientist and physician in New York City until his death.

**Scientific Findings & Medical Applications**

Revici's medical findings derived from a number of different lines of investigation, each simple enough by itself. Interwoven, however, they make a complex body of knowledge. The starting point was an observation made in the 1920s, while he was still in his 20s.

Cancer patients in pain showed a cycling in their levels of discomfort. In some patients, the pain worsened in the morning, in others it intensified at night. Eating eased the pain in some, but sharpened it so much in others, they dreaded eating.

Hypothesizing that this cycling might relate to an underlying cycling of the patients' physiology, Revici looked at various aspects of blood and urine (using the relatively simple technology available to him at the time).

His investigations showed that healthy persons typically had daily rhythmic fluctuations in such basic physical parameters as urinary pH and levels of free potassium in the blood. In contrast, cancer patients had abnormal fluctuations, showing either patterns of acidic imbalance or alkaline imbalance.

Further investigation found that patients in acidic imbalance could relieve their pain temporarily by ingesting a small amount of sodium bicarbonate. But patients in alkaline imbalance who ingested sodium bicarbonate suffered worse pain. Repeating the experiment with dilute phosphoric acid gave roughly converse results.

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Realizing that these small amounts of dilute acid or base wouldn't change bodily pH, he next placed platinum electrodes in painful loci of patients with superficial tumors, as well as in non-painful parts of the tumor mass and in normal tissue.

All these experiments led Revici to conclude that the pH of painful local lesions was not only different from the rest of the body, but that ingestion of small amounts of base or acid could specifically and quickly alter these painful lesions.

As a result of these studies, Revici proposed that a crucial distinction be made between pathological pain and what he termed "physiological pain" (a distinction supported by many subsequent years of research).

To ease pain in his cancer patients, he then turned to developing lipidic means to change pH, recognizing that interventions based on amino acids, ions, or proteins would not last long enough for meaningful relief.

Before proceeding, however, he felt it necessary to redefine lipids (fatty acids and sterols), which were generally regarded in the early 20th century as greasy, water-insoluble substances extractable in ether (a definition that still appears in many biochemistry books).

Decades ahead of anyone else in the field, he described them at a molecular level, correctly noting the importance of their polar and non-polar regions. As his career progressed, Revici's definition guided his clinical use of lipids by supplying an accurate structural guide for analysis of therapeutic compounds he wished to create.

During his European years, Revici also launched into a systematic study of the effects of different elements on bodily function, a research path ending in his categorization of elements as either inducing anabolic or catabolic states of metabolism.

Later, he discovered that within a vertical series of the Periodic Table, elements acted similarly, that their valency shell partly determined their bioactivity, and that the concentration of an element in different organizational levels of the body was both precisely regulated and a key determinant of normal and pathological states.

By the time he had emigrated to the US, Revici's investigations into the molecular structure of carcinogens and other bioactive molecules had revealed that many bioactive molecules exhibited a charge structure in which adjacent carbon atoms would be predicted to carry identical charges. The concepts Revici evolved from study of these "twin formations" (as he termed them), or energetic centers, also played a crucial role in his design of therapeutic agents.

As with so much of his work, examination of molecular structures makes one wonder why Revici's American peers resisted this discovery: Flip the pages of the Merck Index, and example after example of bioactive molecules with such an energetic configuration march by.

Repeatedly, Revici's studies on lipid function pointed the way to findings that predate ideas widely accepted today. Decades before Bengt Samuelsson reported on leukotrienes, earning a Nobel Prize, Revici essentially described them, indicating their crucial role in inflammation.

It was characteristic of him, though, to view these compounds as part of a much larger picture. Instead of choosing to concentrate on this one topic for years, he swiftly moved on to elucidate the role of bioactive lipids in the early stages of cellular and systemic host defense processes. Intervention by lipids at this level of the body's defenses, he reasoned, might affect outcome, and even the extent of mobilization, at other levels.

As he developed his theories and applications, Revici incorporated another basic insight: The damage caused by disease frequently isn't done by the pathogenic focus alone, but by the body's defense mechanisms as well. He may not have been the first to codify this key insight as a therapeutic principle, but once more he seems to have preceded the mainstream in incorporating the principle to treat patients.

Because Revici believed that these defense mechanisms might do more harm than the pathogenic focus itself, (once activated into disequilibrium), he devoted himself to devising therapeutic agents that could restore normal bodily function.

Based on his European research, he utilized the properties of elements to alter different levels of function, and the ability of lipids to induce longer-lasting alterations, to create a large series of therapeutic compounds in which elements were conjugated into lipids. He thereby anticipated, again by decades, interest in lipids as carriers of pharmacologically useful compounds.

In sum, the different paths of research Revici followed throughout his career enabled him to pioneer, intentionally, with foresight, a great number of therapeutic compounds designed to produce specific effects on the function of normal and diseased tissues.

Without exaggeration, then, one may say that he developed a theory of rational drug design long before the concept entered the imagination of the larger scientific community.

Next month: Publications

References

4. Revici E, Affidavit, sworn and notarized 2/3/55. This document serves as the basis for all biographical information included here.