Álvaro Alvim—Radiologist and Brazilian “Martyr to Science”

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The discovery of X-rays in 1895 by Wilhelm Conrad Röntgen in Würzburg, Germany, dramatically changed medical practice. This advance also created a generation of physicians, nurses, and technicians who were harmed by radiation before the potential risks of X-rays were fully understood.

Common early practices such as a radiologist putting his finger in front of a fluoroscope until his own bones appeared (in order to ensure the fluoroscope was appropriately warmed up before examining a patient) contributed to extremely high doses of radiation exposure for healthcare workers. Both local tissue injury (eg, radiation burns, necrosis) and systemic complications (eg, aplastic anemia, myelodysplasia or myeloid leukemia) resulted.

Percy Brown, an early Boston radiologist, wrote in his 1936 book American Martyrs to Science, “Within 90 days of Roentgen’s discovery, suspicion aroused in the minds of many investigators that X-rays or something involved in the production of X-rays might have some ill-effect on living tissues exposed to them.” However, it was not until 1928 that formal recommendations about exposure were introduced at the 2nd International Congress of Radiology in Stockholm.

The most well-known early Brazilian radiologist was Álvaro Freire de Villalba Alvim. He was born on April 16, 1863, in Vassouras, Rio de Janeiro, Brazil. Relatively little is known about his early life. In 1887, Alvim graduated from the Bahia School of Medicine and set up a general practice in Rio de Janeiro. In 1896, he traveled to France and studied with Marie and Pierre Curie. He bought X-ray equipment during his trip and later installed this equipment in his clinic upon returning to Brazil.

In 1897, Alvim was asked to assess radiographically a pair of xiphopagus conjoined twins, Rosalina and Maria Pinheiro Davel, prior to a planned separation surgery by Eduardo Chapot Prévost (1864-1907), a pioneering Brazilian surgeon. Alvim’s radiographs helped demonstrate that the twins did not share any vital structures, though one twin had dextrocardia. The surgery—the first attempt at separation of conjoined twins in South America—was considered a success. Although Maria died of postoperative complications, Rosalina lived to adulthood. This brought Alvim considerable recognition and he was subsequently referred many patients.

Alvim later contributed to the invention of leaded drapes, which helped decrease radiation exposure to patients, early radiologists, and radiology technicians. Unfortunately, the introduction of lead shielding came too late for Alvim himself; he lost parts of both hands because of radiation burns. With the assistance of hand prostheses, however, he was able to continue his practice and experimentation. On May 21, 1928, Alvim died of leukemia in Rio de Janeiro. He is considered a “martyr to science” in Brazil.

The President of Brazil in the mid-1920s, Arthur Bernardes, awarded Alvim a humanitarian medal shortly before his death. There are also several schools, streets, and clinics in Rio de Janeiro that bear Alvim’s name. In December 1963, Brazil honored Alvim philatelically (Scott# 971) on the 100th anniversary of his birth. The stamp depicts Alvim working with a hand prosthesis.

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