Rehydration: Mexican forensic scientists' crime-fighting weapon

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Jorge's putrefied corpse would have been buried in an unmarked grave but for a rehydration technique pioneered in Mexico that allowed him to be identified by his tattoos and given the send-off his family wanted.

In the northern city of Ciudad Juarez—once considered the most violent in the world—close to the United States border, unidentifiable bodies are an all too common sight due to the interminable war between drug cartels that have left 14,000 dead over the last decade.

But the town's forensic scientists, such as Alejandro Hernandez-Cardenas Rodriguez, have garnered a worldwide reputation for their work in rehydrating the tissue of mummified corpses.

"If you give a mummified or putrefied corpse to family members, and they can't look at it, or if they do they can't recognize it, they will always remain unsure, even if we tell them that thanks to genetics there's a 99.99 percent certainty that it's him," said Hernandez-Cardenas, an expert of international renown who has held conferences and workshops abroad to teach his techniques.

"If we give them a body in the best conditions, rehydrated, they will have the certainty they are receiving the body of their loved one."

To rehydrate a body, Hernandez-Cardenas plunges it for several days into a tub filled with 300 liters (80 gallons) of water mixed with a solution he created.

It takes three to five days to rehydrate a putrefied corpse and a week for a one that has been mummified—or dried up.

Experiments on hands and ears

Hernandez-Cardenas began tests in 2004 to perfect a technique first invented at the turn of the 20th century in the US.

Originally it was used to allow finger prints to be taken from certain corpses but Hernandez-Cardenas then began experimenting on "several hundred" hands, ears or entire bodies.

His technique, patented in 2017, improves the appearance of skin, bringing tattoos, scars or distinctive marks back to life. But it also allows for internal organs to be better viewed, thus helping in the identification of the cause of death.

When it came to the body of Jorge, discovered a month after his death, the technique made visible his name written over a red heart on the left side of his blackened body.

Other tattoos including an Aztec sun on a forearm and a message reading "My son Jesus," also allowed his family to identify him.

Rehydration is merely the latest in a series of measures used by forensic scientists in the fight against violent crime in Mexico, most of which goes unpunished.

Identifying victims is just the first in the succession of obstacles in convicting criminals and experts can be faced with bodies that have been decapitated, burnt, amputated or sprayed with up to 200 bullets.

Forensic scientists from Chihuahua state, where Ciudad Juarez is

situated, often share their experiences with counterparts throughout the country who either lack training or are hamstrung by "fear," according to Rafael Garcia, 35, a crime scene investigator in Ciudad Juarez since 2009.

Ambush danger

Although Garcia has never considered leaving his role, his family has asked him to find less dangerous work.

"My parents tell me: think hard, look at the violence there is," he said, having just spent three hours working on a body found in the back of a car.

In 2010, he was the victim of a gun attack while working at the site of an ambush on a police convoy.

Since 2012, forensic scientists have carried guns while they also undergo training in firearms, security and ambushes.

This year alone, there have been 1,118 murders in Ciudad Juarez, which last year came 20th in a list of the world's most dangerous cities compiled by Mexico's Citizens' Council for Public Security, with 56 murders per 100,000 inhabitants.

It's a city also sadly known for a spate of violent murders of women and girls since 1993.

Garcia has been called out to up to eight crime scenes in a single day.

"It's tiring, not just physically but also mentally. You have to control your feelings and the pain of those close close to you," he said.

According to Ivan Mendoza, 26, who quit the engineering sector three years ago to work with corpses: "Sometimes you get home to be told you smell bad.

"But we're used to it and we put our feelings to one side."

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