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Napoleon's mysterious death unmasked, UT Southwestern researcher says

DALLAS – Jan. 16, 2007 – A new investigation into Napoleon Bonaparte's cause of death might finally put to rest nearly 200 years of lingering mysteries about the illness that killed the French emperor during his island exile, a UT Southwestern Medical Center scientist reports.

American, Swiss and Canadian researchers applied modern pathological and tumor-staging methods to historical accounts and found that Napoleon died of a very advanced case of gastric cancer that stemmed from an ulcer-causing bacterial infection in his stomach, rather than a heretofore belief of a hereditary disposition to the cancer. The analysis, which also refutes rumors of arsenic poisoning, points to gastrointestinal bleeding as the likely immediate cause of death.

The report, available online and in the January edition of *Nature Clinical Practice Gastroenterology & Hepatology*, indicates that the despot's demise was imminent.

"This analysis suggests that, even if the emperor had been released or escaped from the island, his terminal condition would have prevented him from playing a further major role in the theater of European history," said Dr. Robert Genta, professor of pathology and internal medicine at UT Southwestern and senior author of the study. "Even today, with the availability of sophisticated surgical techniques and chemotherapies, patients with gastric cancer as advanced as Napoleon's have a poor prognosis."

Napoleon, born Aug. 15, 1769, ruled France in the late 1700s and early 1800s. He conquered much of Europe, but he was ultimately defeated at the battle of Waterloo in 1815. The British then exiled him to St. Helena, an island in the South Atlantic Ocean.

He died May 5, 1821.

The cause of his death has been highly scrutinized over the years. Dr. Genta and his colleagues, whose research focuses on gastritis and gastric cancer, investigated the case because of their interest in the way disease affects the behavior of historical figures and, in turn, the course of history. In Napoleon's case, they were intrigued by a popular notion that Napoleon could have altered the balance of European power had he escaped his exile.

An autopsy at the time cited stomach cancer as the cause of death. A study done in 1938 indicated that Napoleon's father died of stomach cancer. In 1961, an elevated level of arsenic was found

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in hair taken from Napoleon, inspiring rumors of arsenic poisoning.

To find answers, Dr. Genta and the other researchers combined current medical knowledge and autopsy reports, memoirs of the physicians who treated Napoleon on the island, eyewitness accounts and medical histories of family members.

Autopsy and physician descriptions revealed no telltale signs of arsenic poisoning, such as hemorrhaging in the lining inside the heart, and no skin, lung or bladder cancers were present.

Gastric cancer was more likely at fault, Dr. Genta said. Other scholars have recently found that the plump emperor lost at least 20 pounds in the last six months of his life, a sign of gastric cancer. The autopsy descriptions show that Napoleon's stomach was filled with a dark material that resembled coffee grounds, an indication of gastrointestinal bleeding that likely was the immediate cause of death, Dr. Genta said. The most important description was of a large, ulcerated lesion on his stomach, and a smaller ulcerated lesion in another part of his stomach that had penetrated the wall and reached the liver.

The researchers – obviously unable to observe the body – compared the original descriptions of the lesions with modern images of 50 benign ulcers and 50 gastric cancers. They determined that no benign cancer could look like the lesion described in the autopsy.

“It was a huge mass from the entrance of his stomach to the exit. It was at least 10 centimeters long. Size alone suggests the lesion was cancer,” Dr. Genta said.

They then used a state-of-the-art tumor-staging method from 21st century pathology and determined that Napoleon had at least T3N1M0, or Stage IIIA, gastric cancer, which is very severe. The method grades severity on a 1 to 4 scale, with 4 being the worst case. The “T” designates cancer size; the “N” designates the presence of lymph nodes, which are associated with tumors; and the “M” designates metastasis of the cancer to other organs. The autopsy and other accounts indicate that the cancer was large, lymph nodes were present around the stomach and there were no tumors in other organs. Only 20 percent of patients with Stage IIIA gastric cancer survive five years if treated with modern surgery and chemotherapy.

But what might have caused Napoleon's cancer?

Risk factors for gastric cancer include male gender, genetic susceptibility, chronic gastritis and infection by the bacteria *Helicobacter pylori*.

Although genetic susceptibility is a possible cause, it's not likely, Dr. Genta said. That's because the autopsy of Napoleon's father described a tumor that might have been something other than gastric

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cancer. And because autopsies were not performed on other Bonaparte family members, their causes of death can only be speculated upon based on symptoms or medical reports.

Instead, the ulcerated lesion on the emperor's stomach suggests a history of chronic *H. pylori* gastritis, which might have increased his risk of gastric cancer, Dr. Genta said. The risk might have been further increased by his diet full of salt-preserved foods but sparse in fruits and vegetables – common fare for long military campaigns.

“Even if treated today, he'd have been dead within a year,” he said.

Dr. Genta completed some of the work for this report while at the University of Geneva. Researchers from the Aarau Cantonal Hospital and the Institute of Pathology at the University Hospital of Basel, both in Switzerland, and McGill University in Montreal also contributed.

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