

Authors and Disclosures

Author

Albert Lowenfels, MD



Professor of Surgery, Professor of Community Preventive Medicine; Emeritus Surgeon, Department of Surgery, Westchester Medical Center, Valhalla, New York

Disclosure: Albert B. Lowenfels, MD, has disclosed the following relevant financial relationships:

Served as an advisor or consultant for: Solvay Pharmaceuticals, Inc.

The Case of the Man Who Lost a Lung But Won a Prize

Albert Lowenfels, MD

Posted: 03/09/2011

Introduction to the Case

The patient was a 56-year-old man who complained of severe cough and weakness of approximately 4 months duration. The onset of his illness began with fever, chills, and a mild cough. An x-ray taken at that time revealed an area of consolidation in the left lung, for which he was treated with a 1-week course of penicillin and bed rest.

However, the patient's pulmonary symptoms persisted, and about 2 months after the onset of symptoms he had a tomogram of the lungs, followed by bronchoscopy and a biopsy. A week after the bronchoscopy an operation was performed. Because the patient did not want to be hospitalized, a team of surgeons and anesthesiologists performed the operation in the patient's home. The patient had a slow recovery, but 2 months after the operation he was well enough to attend his grandson's third birthday. Four and a half months after surgery he spent a day hunting with friends and relatives, but that night, to the family's surprise, he died quietly in his sleep.

Medical and Family History

Family and Personal History

The patient was a moderate drinker but smoked heavily, beginning as a teenager. His father, a heavy smoker, died of chronic obstructive pulmonary disease at age 71. His mother, who was also a heavy smoker, died at age 85 with a suspected lung tumor. His older brother, also a smoker, died at age 77 of cancer of the throat.

Medical History

He had appendectomy performed at age 19 and while in his 20s he developed a duodenal ulcer. During middle age, he developed claudication, which was sufficiently severe to necessitate a lumbar sympathectomy at age 54. The patient had a speech impediment that had persisted since childhood.

A Brief Biography

George VI was the son of undemonstrative and distant parents, George V and Queen Victoria Mary. He had an older brother, Edward, who was in line to be king. George, whose full name was Albert Frederic Arthur George, was known to his family as "Bertie." He became king in 1936, after his older brother, Edward, abdicated in order to marry the twice-divorced American woman Wallis Simpson. Such a marriage was incompatible with the accepted standards of the British monarchy. George had a persistent speech problem and had been a nervous child. As an adult, George had a modest, unassuming personality and was apprehensive about assuming this highly visible post.



Figure 1. King George VI. Portrait taken in the 1940s after his coronation. Source: Wikipedia, Library of Congress.

The Patient's Speech

George VI's emotional issues with stammering and his treatment for it were the subjects of the 2010 Oscar-winning movie *The King's Speech*. Several speech therapists had tried without success to help the King overcome this persistent problem -- a source of embarrassment when he spoke in public. Eventually, the King consulted Lionel Logue, an Australian, who helped him improve both his self-confidence and his speech impediment. As suggested in the movie, Logue tried to convince his patient to stop smoking; unfortunately he was unsuccessful. George VI, who had a strong, resonant voice, became an excellent speaker and used the microphone and radio to deliver inspiring speeches during World War II. His subjects greatly admired the King for his bravery and courage as Britain's defiant Monarch during the difficult period before, during, and after World War II.

What Causes Stuttering?

Stuttering, also known as stammering, is a relatively common affliction, more likely to affect males than females. It usually develops during childhood and, in many cases, resolves spontaneously as the child matures. Famous persons other than George VI who have had a stuttering problem include: Aristotle, George Washington, and Charles Darwin. It has long been believed that being born left-handed, particularly when trained to be right-handed, as George VI was, is associated with stuttering. However, a survey by the Stuttering Association casts some doubt upon this association because the overall proportion of right- and left-handed people who stuttered was about the same as in the normal population.^[1] There is a high rate of concordance of this trait in identical twins, and many families who included people with stuttering have multiple affected members. A recent report found that some adults with stuttering have a defect in genes known as *GNPTAB*, *GNPTG*, or *NAGPA* -- genes that are associated with lysosomal metabolism, a system that functions to remove intracellular "garbage."^[2] The first 2 of these genes have been linked with joint, skeletal, and internal organ disorders as well as with developmental delay. It is unclear, however, why such mutations should be related to stuttering and, in any event, they explain only a small proportion of cases. Other genetic causes for this common affliction will undoubtedly be discovered. The knowledge that genetic defects can lead to stuttering is helpful but does not explain why males are more susceptible and does not eliminate the importance of nongenetic social and environmental causes.

How the Patient Was Treated at the Time

The King was a heavy smoker and 2 years before developing lung cancer he developed another smoking-related problem -- arterial insufficiency of the lower extremities, which became so severe that his physicians considered amputating his right leg.

In 1949, he underwent a lumbar sympathectomy, which was performed in Buckingham Palace, for incapacitating ischemia of the right leg. At that time, this was about the only surgical procedure employed for the management of arterial insufficiency of the lower limbs, and his symptoms improved.

In 1951, when the King developed a suspicious shadow on his chest x-ray, Clement Price Thomas, a noted Welch thoracic surgeon, established the diagnosis of lung cancer by performing a bronchoscopy. He then performed a pneumonectomy, which

took place in the Buhl room of Buckingham Palace after it had been converted with special lighting into a temporary operating room.

Evarts Graham, a respected Midwestern surgeon, is credited with performing the first pneumonectomy in 1933.^[3] In a landmark article describing this historic first pneumonectomy, Graham wrote: "The left lung and many of the tracheobronchial mediastinal glands were removed in a one stage operation because of a carcinoma that originated in the bronchus of the upper lobe but which was so close to the bronchus of the lower lobe that, in order to remove it completely, it was necessary to remove the entire lung."

After the operation the King returned to his own bedroom where he slowly recovered from the procedure. As was customary at the time, the patient, even though he was King, was never told he had cancer. Price Thomas made the following comment about his royal patient: "The King is the best patient I ever had." Price Thomas himself eventually contracted lung cancer.^[4,5]

George VI's older daughter, Elizabeth, succeeded her father at his death and became Queen of England, a position she has held for almost 60 years.

Other Operations Performed in Unusual Settings

Other Operation at Buckingham Palace

Several other members of George VI's royal family are known to have been operated upon while residing in Buckingham Palace. In 1871, at age 52, Queen Victoria developed a painful 15 cm axillary abscess. Lord Lister, the respected Scottish surgeon, drained the Queen's abscess, a procedure he performed in the Palace, after she had been anesthetized with chloroform. He used his recently devised carbolic acid spray to maintain antisepsis.

In 1901, just prior to his coronation, Victoria's son, Crown Prince Edward, developed severe abdominal pain, with signs and symptoms suggesting appendicitis. Although initially reluctant to postpone his coronation after waiting for so many years, Frederick Treves, an outstanding general surgeon, eventually persuaded the king to undergo surgery, which was also performed at the Palace.

Other Unusual Settings

Several operations have been performed under unusual circumstances outside the traditional hospital operating room. A famous example was President Grover Cleveland's successful 1893 operation for cancer of the mouth, performed aboard his yacht in Long Island Sound. Secrecy surrounding the president's condition was the probable reason for the shipboard operating site.

In 1942 a hospital corpsman, Wheeler B. Lipes, performed a successful emergency appendectomy on a crew member with acute appendicitis aboard a submarine submerged in the South China Sea.

In 1999, Dr. Jerri Nelson, while stationed at the South Pole, performed a needle biopsy of a mass in her own breast, which proved to be cancer. Eventually, when weather conditions improved, she was airlifted back to the United States for definitive therapy.

At present many ambulatory surgical procedures, including major operations such as cholecystectomy, can be performed outside the usual hospital operating room. But these procedures are usually carried out in an environment almost equivalent to a traditional operating suite and not in the patient's home, as was the case with the King's pneumonectomy.

Lung Cancer and Smoking -- Identifying the Link

Cigarette smoking became popular around the mid 19th century, and in World War I cigarettes were rationed to soldiers. During the period between World War I and World War II the frequency of lung cancer increased dramatically. Yet physicians, surgeons, and epidemiologists were slow to recognize the link between smoking and lung cancer. Initially, even Evarts Graham, the surgeon who performed the first pneumonectomy for lung cancer and who treated hundreds of patients with this disease, was reluctant to believe the mounting evidence that smoking causes lung cancer. He observed that although there was an association between smoking and lung cancer, there was also a similar association between the sale of nylon stockings and lung cancer. Sadly, Graham, a heavy smoker, died from lung cancer a few years after King George.

One of the first persons to recognize the potential etiologic role of cigarettes was Ernst Wynder, who, as a medical student at George Washington University in St. Louis,

performed a case–control study comparing the frequency of smoking in patients with and without lung cancer. The study, published in 1950, demonstrated a strong association between smoking and the risk for lung cancer.^[6]

A few years later, in 1954, two British doctors published a landmark cohort study of English physicians that demonstrated a highly significant link between smoking and death from lung cancer.^[7] Finally, in 1964, Luther Terry, the Surgeon General of the United States, published the widely publicized report summarizing all the available evidence linking smoking with lung cancer.^[8]

Unfortunately, information about the role of smoking as a cause of lung cancer was unknown during King George VI's lifetime. Smoking was a common habit and many members of the royal family smoked cigarettes. There was some understanding that tar might be the cause of lung cancer, but many researchers believed that the source was tar used to surface roads -- not cigarettes. The King died from lung cancer without suspecting that smoking was the cause and without even knowing that he had cancer.

How Would the Patient Be Treated Today?

Current treatment for King George VI's lung cancer would differ markedly from the treatment he received 60 years ago. He would have been cared for by a team of oncologists who would have supervised the initial diagnosis, workup, and eventual therapy. It is almost certain that the King's surgery would be performed in a specialized cancer center rather than in Buckingham Palace.

The King probably suffered from non–small cell lung cancer because it accounts for the majority of cases of lung cancer. Surgery did not cure the King; indeed he died within a few months of his pneumonectomy, suggesting that he already had advanced disease at the time of his surgery.

Today, to select the most appropriate therapy, he would have had a much more extensive workup and not just a tomogram. Staging procedures would most likely include one or more of the following: CT scan, PET scanning, and preoperative mediastinoscopy, which is now considered the standard of care for accurate staging. Chemotherapy, available since the 1980s, would probably be part of the treatment strategy because it is known to result in increased survival. The exact type of therapy

would depend upon tumor type and tumor stage and would closely follow guidelines, such as those outlined by the National Comprehensive Cancer Network.^[9]

Unfortunately, the current 1-year survival rate for lung cancer -- even with today's sophisticated diagnostic and therapeutic options -- is less than 50% (see Figure 2) and so it is likely that King George would still die from his smoking-related lung cancer.

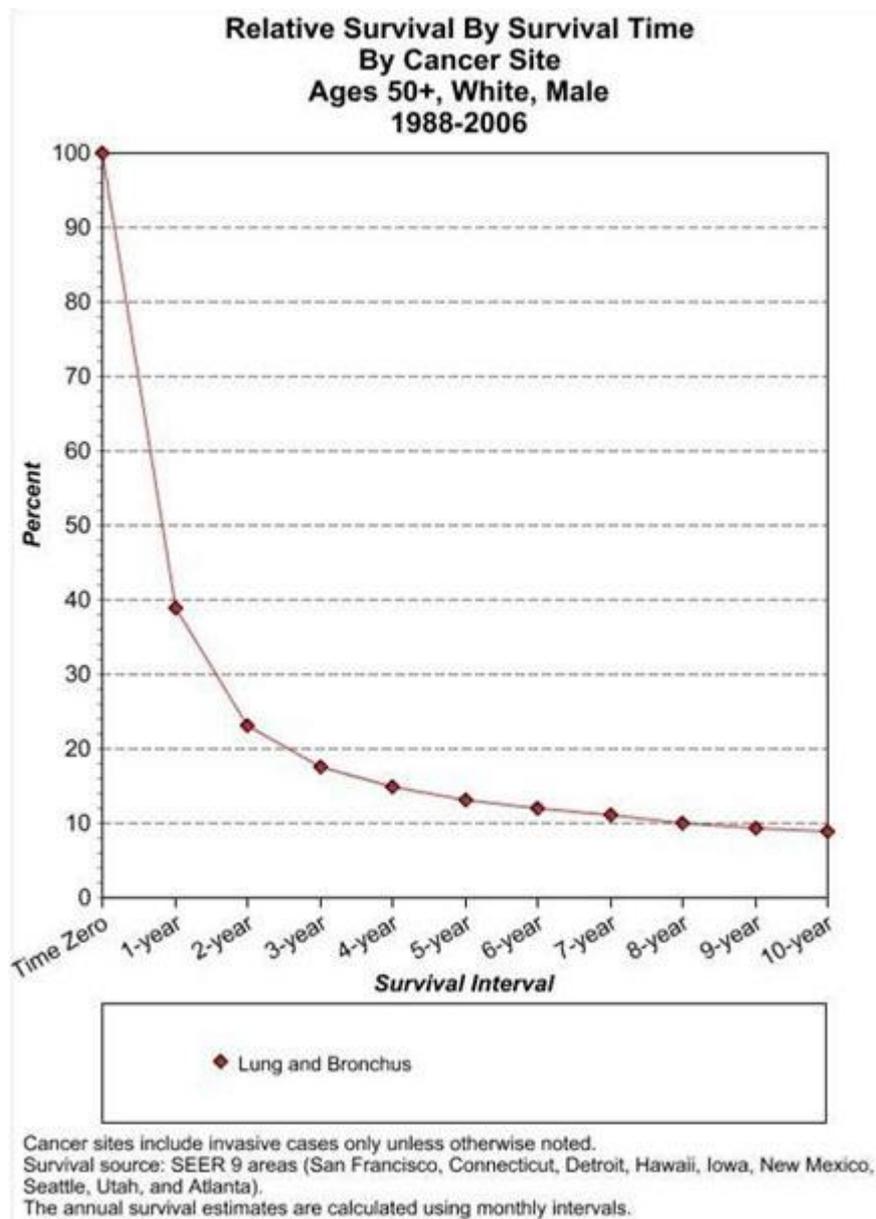


Figure 2. Current data (1988–2006) for relative survival for lung cancer in white males > 50 years. United States, SEER data.^[10]

Summary

Albert Frederick Arthur George, known as “Bertie,” the youngest son of King George V and Queen Mary, never expected to become King of England because his older brother, Edward, was the heir-apparent. However, Edward abdicated soon after becoming King of England. “Bertie,” his younger brother, being next in line, inherited the throne, ruling as George VI during the critical years of World War II. Unprepared and initially lacking the self confidence required to be a successful monarch, the new King had an additional handicap -- stuttering, which was aggravated by the tension associated with public speaking. With the help of a dedicated speech therapist, the new King overcame his speech problem to become a greatly respected and much loved monarch.

Born at the end of the 19th century, the King belonged to the last generation growing up without knowing that smoking leads to cancer. Most of the Royal Family smoked, and many died of smoking-related diseases. King George VI died from the commonest smoking-related tumor: cancer of the lung. He joins the many millions of people to die from this lethal, largely preventable disease.

The King's Speech. 2010. Directed by Tom Hooper with Colin Firth playing the role of King George VI.

A Nation Watched. News clip about the King's 1951 lung operation. Available at: <http://www.britishpathe.com/record.php?id=33981> Accessed February 28, 2011.

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