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Management of Subarachnoid Hemorrhage in Two Important Italian Political Leaders: A Paradigm of Ethical and Technological Evolution of Neurosurgery During the Past Half-Century

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Key words

- Cerebral aneurysm
- History of neurosurgery
- Italian
- Neurosurgery evolution
- Political leaders
- SAH

Abbreviations and Acronyms

MCA: Middle cerebral artery

SAH: Subarachnoid hemorrhage

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INTRODUCTION

On January 5, 2014, Panorama, a wide-circulation Italian weekly magazine, ran the headline “Bersani and the Curse of the Communist Leaders—After Togliatti and Berlinguer, also Bersani Suffers a Brain Hemorrhage.”¹ Pier Luigi Bersani, the General Secretary of the Democratic Party, had suffered a subarachnoid hemorrhage (SAH) after the rupture of a middle cerebral artery (MCA) aneurysm. Why a curse? In a curious and extraordinary coincidence, 5 of 7 most relevant leaders of the Italian Communist Party (Partito Comunista Italiano, which was established in 1921, has been the largest Communist Party in Western Countries) suffered a cerebral stroke (Table 1). This is an odd fate that even Lenin and Stalin, the top founders and leaders of the Soviet Union, did not escape. Stroke also seems to have plagued many Presidents of the United States, and not without political

consequences.² This observation, however, is a mere curiosity and does not represent the major theme of this article, nor has this coincidence seemed to have discouraged politicians from contesting the leadership of hon. Bersani’s Party.

Nowadays, when a political leader or a very important person is hospitalized, the public expects to receive thorough information regarding the patient. In contrast, in the past conventional medicine was very imaginative in avoiding certain words and adjectives, especially those indicating a lack of remedy, such as cancer, coma, heart attack, hemorrhage, etc. With better understanding of the disease progression and successful treatments, people have restored the real and less-terrifying meaning of these words. Such changes in both medical and social communication and disease management are highlighted by specific stories that narrate similar cases in different historical epochs. This train of thought is a good chance for neurosurgeons to trace the tremendous evolution that neurosurgery has undergone during the last half century.

Internal Medicine Department initially in Padova and later in Rome. In his memoirs, Cesare Frugoni writes about many of his patients, mostly renowned personalities between the 2 World Wars, such as King Fuad of Egypt, King Alphonse XIII of Spain, the musician and conductor Arturo Toscanini, the Nobel Prize Guglielmo Marconi, Benito Mussolini, and many other members of the jet society of that time.³

In particular, he was the doctor who managed the most critical illness of Palmiro Togliatti, the powerful 4 decade-lasting General Secretary of the Italian Communist Party (Figure 1). Togliatti’s neurosurgical story is very interesting and worthy of description. On July 14, 1948, in one of the most critical periods of the newly established Italian Republic, a young right-wing student attacked Togliatti. A bullet became lodged in the external occipital protuberance without penetrating the skull and was removed with no clinical consequences. To reassure millions of followers who were ready to unleash a communist revolution that would have radically changed the political geography of Europe after the Second World War, that evening Togliatti, lying on his bed in the Clinic, greeted his supporters despite his physical condition.

CASE 1: PALMIRO TOGLIATTI

Professor Cesare Frugoni (1881–1978) was a famous clinician and the chairman of the

Table 1. General Secretaries of the Italian Communist Party—Democratic Party Diagnosed with Cerebrovascular Disease

Name	Years of Service as Secretary General	Year of Disease	Disease	Age, years	Age at Death, years
Amadeo Bordiga	1921–1924	1969	Cerebral stroke	80	81
Antonio Gramsci	1924–1927	1937	Cerebral hemorrhage	46	46
Palmiro Togliatti	1927–1964	1964	SAH	71	71
Luigi Longo	1964–1972	1968	Cerebral hemorrhage	68	80
Enrico Berlinguer	1972–1984	1984	Cerebral hemorrhage	62	62
Pier Luigi Bersani	2009–2013	2014	SAH	62	

SAH, subarachnoid hemorrhage.

Two years later, on August 22, 1950, he was involved in a car accident while on vacation. He suffered a head trauma with a frontal fracture and a fracture of the twelfth dorsal vertebra. After an initial spontaneous improvement, a progressive deterioration ensued. The neurologist Professor Ugo Cerletti (1877–1963, known for the invention of electroshock therapy for mental disturbances, and a member of the Italian Communist Party)⁴ diagnosed Togliatti with a possible subdural chronic hematoma purely by clinical examination and suggested surgical evacuation. Professor Valdoni, Chair of General Surgery, and Professor Piero Frugoni performed the surgery in the private clinic “Villa Salus.” They made “four drillings, two on each side, that allowed

first to confirm the diagnosis of hematoma,” although we don’t know which side, “and to evacuate it, with such a wonderful and prompt result that hon. Togliatti, still on the operating bed, regained consciousness.”

On May 1, 1955, in the late morning of a very sunny day, hon. Togliatti was giving a lively and long political speech outdoors, bareheaded under the sun in Trieste. He suddenly noticed that he was not able to voluntarily move his right hand and immediately later he started vomiting and had a severe headache. After the injection of a pain reliever, he found the strength to take up the subject for a few minutes and conclude his speech. The chief of the Neurology and Psychiatry Department of Trieste, Professor Francesco Maria Donini, made the diagnosis of SAH after a lumbar puncture. Cesare Frugoni reports that “in the meantime the appropriate actions had been taken, but I did not want the word hemorrhage to be shown in the bulletin. Actually I did not consider appropriate to give too precise technical explanations because we were talking about a politician, whose future position had to be protected, also avoiding the use of words, as hemorrhage, that could have led to misunderstandings and incorrect assumptions.” Furthermore, he specifies “the location of the SAH is certainly intracranial, but its importance and implications are very different compared to a cerebral hemorrhage.” Nevertheless, Prof. C. Frugoni must have had some doubts about the correctness of his conduct because he added, “however, doctors who have carefully read the bulletin would have

certainly understood what the problem was” (*excusatio non petita...*). He also blamed the fact that “Togliatti and his collaborators did a serious imprudence when they decided to keep the speech outdoors, bareheaded under the sun.”

Nine years later, the 83-year-old Prof. C. Frugoni was on vacation in Switzerland when he received an urgent call. The 72-year-old hon. Togliatti was in deep coma after an apoplectic stroke in Yalta. Prof. C. Frugoni was asked to provide medical consultation to hon. Togliatti and travelled to Yalta with Communist Party officials. Yalta was the site of collective holidays organized by the Soviet State, where the fun was alternated by the acculturation of young people. Hon. Togliatti was in Yalta in this capacity. He was holding a conference in Russian to young pioneers of the Communist Party of the Soviet Union, “also this time bareheaded and directly under the sun,” notes Prof. C. Frugoni: “Togliatti suffered a stroke exactly as in Trieste nine years before.” Prof. C. Frugoni and Prof. Mario Spallone, a fervent Communist and the personal doctor of hon. Togliatti, reported Togliatti’s neurosurgical history to their Russian colleagues, emphasizing the former intervention for the chronic subdural hematoma and the previous SAH. No warning sign had appeared in the previous days, when hon. Togliatti had been involved in writing the “Yalta Memorial” about the future of Communism in the Soviet Union and in Europe, which he had planned to discuss with Brezhnev.

Everything needed for medical care had been minutely prepared and functionally organized in one of the lodges for the young Communist Party of the Soviet Union pioneers. At 1 AM on August 19, 5 days after the event, the following medical bulletin was issued: “The general state of Comrade Togliatti endures severe. According to the program decided with the participation of Prof. Cesare Frugoni, a consultation was held with the neurosurgeon Prof. Alexei Arutiunov. An exploration of the cranial vault was decided for clarifying the subdural space. The intervention performed by Prof. Arutiunov was well tolerated. The post-operative course is normal at the moment.” Hon. Togliatti died on August 21. The number of resuscitations that were undertaken for 2 hours after his cardiac arrest, a length of time we would nowadays define as

**Figure 1.** Hon. Palmiro Togliatti.

aggressive treatment, is impressive. In fact, the Russians sincerely appreciated this Italian leader, who spoke their language perfectly and who defined the suffering of Italian mothers who lost their children in the Nazi-fascist war against the Soviet Union “well deserved and politically useful.” One week after hon. Togliatti’s death, to honor his memory, the Russians named Stavropol-on-Volga, a city of more than 700,000 inhabitants (Тольятти - Togliatti), after him.

Some time later, Prof. Cesare Frugoni received a thank you letter from Khrushchev who, after having sang the praises of the deceased Secretary-General, stated: “I’m very glad that you agreed with your Soviet Colleagues about the diagnosis, the measures taken, and the means applied. Thank you for letting the Russian neurosurgical science talk as the protagonist, with a cranial trepanation looking for a bleeding.”

CASE 2: PIER LUIGI BERSANI

In the past 50 years, the Italian Communist Party has undergone a number of changes. With internal divisions and fusions with other parties that originated from the dissolution of the Christian Democracy Party, Partito Comunista Italiano ultimately adopted the name of Democratic Party. Hon. Pier Luigi Bersani, who has been the General Secretary of the Democratic Party from 2009 to 2013, also suffered a SAH, just like hon. Togliatti, at the age of 62. On January 5, 2014, he complained about a sudden and strong headache with vomiting while he was in his house in Piacenza, Italy (Figure 2). His wife drove him immediately to the local hospital, where he arrived at 11 AM.

As soon as a computed tomography scan showed the presence of a SAH, hon. Bersani was transferred to the more-equipped Ospedale Maggiore in Parma, where a Department of Neurosurgery is available, at 1 PM. A cerebral angiography confirmed the presence of an aneurysm of the right MCA. The first medical bulletin was released by the Hospital Director of the Ospedale Maggiore of Parma: “Today, Sunday, January 5, 2014, honorable Pier Luigi Bersani has been transferred to the Department of Neurosurgery of the University Hospital of Parma because of a sudden SAH. The hemorrhage was diagnosed this morning at the Hospital of Piacenza. After the first examinations confirming the diagnosis, a cerebral

angiography detected the cause of the bleeding. Consequently, the specialists decided for a neurosurgical operation that will be performed this evening.”

The Chair of the Department of Neurosurgery, an author of this paper (E.G.), performed a craniotomy and clipping of the ruptured MCA aneurysm. In the late evening, a second medical bulletin was issued: “The surgical operation of clipping of the cerebral aneurysm, which caused the SAH, has just been completed. The intervention, which lasted about 3 hours, has been successfully performed. The patient’s parameters are stable. The prognosis remains guarded at the moment.” After the intervention, the neurosurgeon talked with the reporters and clearly explained the details not only about the operation but also about the imaging and the clinical status of hon. Bersani at admission. The SAH was graded Fisher III, and Hunt-Hess was 2.

Some days after the operation, another medical bulletin was released, “The general conditions of hon. Pier Luigi Bersani remain stable. The clinical course is regular. The patient is conscious, collaborating, and no neurological deficit occurred. All vital parameters are within the normal range.” The public was informed constantly about every detail of the disease and the clinical course. Anyone could get real-time updates on television and through Internet websites. Hon. Pier Luigi Bersani was discharged subsequently without any neurologic deficit and returned to his previous daily life as Member of the Parliament, actively working in the complex situation of the Italian politics (Figure 3).

DISCUSSION

Hon. Palmiro Togliatti and hon. Pier Luigi Bersani are 2 leading actors of the Italian political circle, separated by half a century

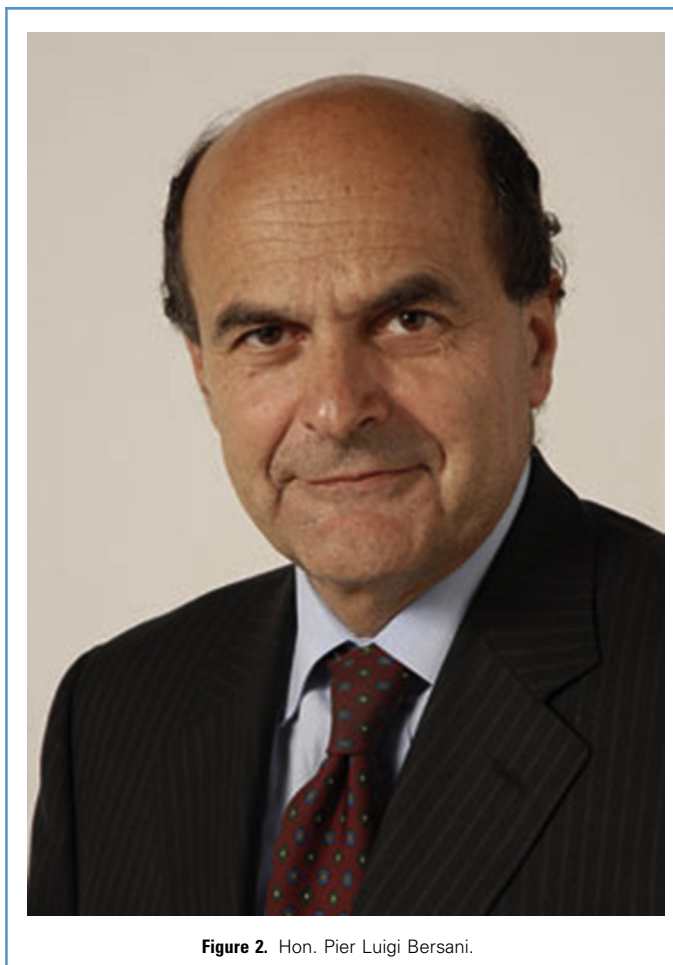


Figure 2. Hon. Pier Luigi Bersani.

of history and development not only of the civil society but also of neurosurgery. Two threads connect these 2 politicians: they have been General Secretary of the Italian Communist Party/Democratic Party, and they have both been affected by the same disease, SAH.

The case of hon. Bersani is part of the contemporary history. SAH is now well known, and it was diagnosed immediately. The computerized telemedicine system allowed the forwarding of computed tomography scan images to the specialists working in a different hospital, with the consequent optimization of the treatment timing. The neurosurgeon is nowadays the leader of the medical team, assisted by the neuroradiologist and not the neurologist, who is not part of the team managing this disease. Angiography showed an MCA aneurysm whose conformation required an immediate clipping. The medical bulletins, which the political word was waiting for, express the severity of the disease and the aptness of the therapeutic maneuvers in a technical and understandable form.

Conversely, the case of hon. Togliatti offers many hints and dramatically marks the social and medical advancements of the past half-century that perhaps we do not clearly perceive (*"Tempora mutantur et nos mutamur in illis,"* i.e., "The times change, and we change with them"). First,

the episode of the subdural chronic hematoma is emblematic. In the 1950s, the neurologist was the diagnostician who used to indicate to the surgeon where to operate, as had been customary for centuries. Neuroradiologic examination was not used routinely and usually reserved for those cases when the clinical presentation of a supposed subdural hematoma was unclear and questionable.⁵ Nevertheless, the intervention was a success.

Togliatti's first SAH episode that occurred in Trieste is even more interesting. The story clearly confirms that SAH was considered as a medical disease in 1955. It was actually called "serous meningitis."⁶ All the precautions against its occurrence are coherent with a medical treatment (absolute bed rest, long convalescence...). Therefore, Togliatti's SAH was performed entirely by medical specialists and even by a clinical doctor. A neurosurgical consultation was certainly possible. Piero Frugoni, Prof. C. Frugoni's son, was a professor of Neurosurgery in Padova at that time. Moreover, cerebral angiography was available in Padova and in other main centers in Italy. The Portuguese physician and neurologist Egas Moniz introduced cerebral angiography in 1927. Cerebral angiography has been performed after SAH since 1931.^{6,7} Advancements in diagnosis and treatment of cerebral aneurysms were obviously hindered by the war. Neutral

countries, especially Sweden with the precious work of Olivecrona and Norlen, therefore became the leaders in this field until the introduction of the intraoperative microscope in the beginning of the 1960s.

Conversely, Italy and Germany were isolated from the rest of the world during the war and because of emigration overseas after the war. Italian neurosurgery advanced gradually thanks to the help of many young doctors, especially from the South, which was first freed by the Allied forces, who were trained by Olivecrona.^{8,9} Possibly, Germany founded its neurosurgical renaissance through the technology of the legendary Zeiss intraoperative microscopes that became the main tool of every neurosurgical room. The years between 1955 and 1964 are the foundation of vascular neurosurgery. Actually, the first papers about aneurysms clipping with microneurosurgical technique were published in 1964–1965.

Interestingly, Prof. Frugoni banned the word "hemorrhage" from being written in the medical bulletin. This behavior is considered very strange and questionable nowadays. Nevertheless, this action was common then. Stalin's cerebral hemorrhage was announced with a 2-day delay, and Lenin's stroke officially was hidden and discussed only informally even in the highest circles of the Party. Nowadays, the possibility of a prompt and precise diagnosis with angiography and the better understanding of the physiopathology of SAH have helped to identify patients with ruptured aneurysms. Furthermore, the advent of the microneurosurgical era, a standardized early surgical intervention, and the attention for delayed complications as vasospasm have helped decrease the mortality and improve final outcomes.

The introduction of computerized telemedicine and a proper organization of regional hospitals are other crucial steps towards the optimal treatment of SAH. The immediate visualization of neuro-radiologic examinations performed at peripheral hospitals allows neurosurgeons to promptly diagnose and decide the appropriate treatments. The hub-and-spoke model for hospital organizations not only rationalizes resources but also rapidly directs patients to the proper hospital to be treated. Along with surgical advances, technology and organization have helped to shorten the time to treatment and



Figure 3. Hon. Pier Luigi Bersani returns to the House of Representatives on February 25th, 2014 (Copyright ANSA).

ultimately improve the patients' outcome. Moreover, the spreading of communications like newspapers, television, and the Internet leads to a consequent increased interest of the population about diseases impacting politics and cultural and social life. For these reasons, in the case of hon. Bersani it was not necessary to hide or avoid the words "hemorrhage" or "aneurysm" as it happened with Togliatti.

There is little to say about the cause of hon. Togliatti's death in Yalta. Of course the definitive diagnosis is not clear, because neuroradiologic examinations and an autopsy were not performed. However, anamnesis and symptoms directly reported by doctors who assisted him indicate a second SAH as the most likely cause of his death, 9 years after the first hemorrhage. Even nowadays, a similar case would probably not benefit from any treatment.

Because of his nonpartisan and authoritative esteem, Prof. C. Frugoni's consultation had the function of a validation of the Soviet medical management of the case. The Russian doctors who rushed from Moscow immediately realized that there was no possibility for treatment. The futile use of cranial trepanation to search for a questionable subdural hematoma can have many explanations; however, it is possible that Prof. Arutiunov could have been prompted by political reasons to show the Soviet Union prestige to the world. Khrushchev himself deemed so precious the life of the Italian leader that he entrusted its preservation to Prof. Mario Spallone, the personal physician of hon. Togliatti. Prof. Arutiunov was 60 years old at the time, and we do not have references showing he had any particular interest in cerebrovascular surgery before 1964. His previous publications showed his interest in head trauma, intervertebral disc pathology, and chronic subdural hematomas.¹⁰⁻¹³ Interestingly, the story of hon. Togliatti is likely to have triggered his interest in cerebrovascular surgery. Actually, as the new Director of the Burdenko Institute of Neurosurgery, Prof. Arutiunov soon after published 2 significant papers on diagnostic and vascular surgery.¹⁴⁻¹⁶

Moreover, hon. Togliatti's death seems to be temporally correlated with the development of interventional neuroradiology in the Union of Soviet Socialist Republics, with the increase of the attempts to exclude cerebral aneurysms through endovascular

means.¹⁷ Another Italian, Guido Guglielmi, later improved this technique with the creation of endovascular detachable coils in 1991.^{18,19} Undoubtedly, the neurosurgical departments in Moscow could certainly provide proper diagnostic angiography in the early 1960s²⁰; however, hon. Togliatti's clinical condition was obviously severe. Even the diagnostic angiography would have required a transfer to Moscow, impossible with the means of that time. Moreover, surgery of cerebral aneurysms with microsurgical technique initially was indicated days or weeks after SAH, and the results of direct attack on ruptured intracranial aneurysms before the introduction of the intraoperative microscope were not satisfactory.

Actually, the first randomized neurosurgical trial carried out by McKissock et al.²¹ demonstrated that the results of conservative therapy were better than those of direct attack on anterior communicating aneurysms. The first and better results of microneurosurgical technique would have been published shortly after the Yalta events (Adams JE, Witt J. The use of the otologic microscope in the surgery of aneurysms. Presented at the Neurosurgical Society Meeting on January 25, 1964).^{22,23} In any case, only Pool was claiming the need for an early aneurysm treatment, which was usually performed at least 10–15 days after bleeding.²⁴ At any rate, hon. Togliatti never recovered consciousness and died on August 21.

The strange leitmotiv connecting Communist leaders during the span of several decades offers a diachronic paradigm not only of the treatment of an infamous disease but also of the communication style related to the disease itself.

CONCLUSIONS

Turning back to the series of the Italian Communist leaders so frequently afflicted by cerebral stroke, we presented the emblematic stories of 2, showing: 1) how a neurologic disease that was "disgraceful" 50 years ago has lost any disquieting significance in the present time to the light of evolution of vascular neurosurgery; 2) how a fatal medical disease has become a neurosurgical one and can be successfully cured; 3) how the novel neuroimaging technology has reduced the relevance of clinical neurologists in neurosurgical

procedures; 4) how a fast file-sharing system has removed some images of the remote past, as VIP patients' rooms are now overcrowded by physicians from everywhere examining the files; 5) how immediate the communication to the world is about the clinical diseases of persons on whom the fate of millions of people depends; and 6) how a fatal event concerning an important politician could have been a novel hint that has shifted the treatment of cerebral aneurysms toward the most conservative endovascular neuroradiologic procedures.

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