

Niccolò Paganini: the hands of a genius

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Summary. Niccolò Paganini was a man stricken by many diseases and according to Myron Schonenfield and Renzo Mantero, he may have also suffered from Marfan Syndrome. The following paper is based on actual physical examinations reports made by his contemporary physicians, documented in personal letters. In addition, the current investigation presents a comparison between a post-mortem mold of Paganini's right hand and several paintings of the Maestro drawn by Lyser, his personal portraitist, and the images of the hand of a well-known musician affected by Marfan Syndrome which was treated by the authors. (www.actabiomedica.it)

Key words: Paganini, violinist, Marfan's, hand, historical

The hand together with its cerebral cortex are what differentiates Man from other beings. Both anatomical structures, strongly related to one another, have created what we are today.

The hand is indissolubly tied to the story and life of Man. Pictorial representation of pre-historic hands were embedded in caverns by our ancestors in order to leave testimony to mankind, such as those to be found at Castillo Santander in Spain.

The hands of a child help to reach the essential maturation of personality. Continuously, hands express both affection through touch, or hate through fist. With his or her hands, a person can pray, express personal political beliefs or emphasize speech through gestures. Some even use hands to predict a person's future. A genius painter like Michelangelo Buonarroti (1475-1564) reminds us that on Judgement Day we will be summoned by our God, not by spoken words but by a "touch" of the hand. Furthermore, the hand of a blind person can be quite fascinating: a substitute of sight, touch allows the person to relate to life nonetheless.

Professor Renzo Mantero (1930-2012), a pioneer in hand surgery, argued that "the hand is the external expression of the brain" (1). The neurologist Wilder Penfield (2) (1891-1976) was successful in mapping

the human brain by locating both the sensory and motor representation on his own body. We now understand that the sensitivity of the hand in general, is the equivalent of almost half of that of the entire body, and if we analyze the size of its motor map it is even more represented. The tridimensional representation of these maps, the homunculus, is depicted as a man attributed mainly by his hands. This is why Mantero defined the hands as the external expression of the brain (Fig. 1).

This statement is the origin of our investigation regarding the hands of a unique and particular genius:

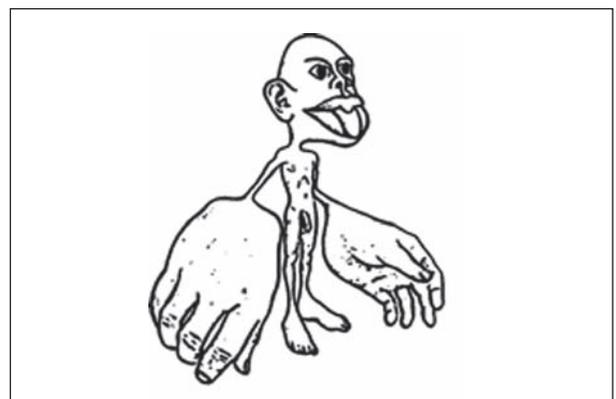


Figure 1. Homunculus, drawing by Marco Paterlini, MD

Niccolò Paganini (Fig. 2-3-4). We studied his hands (Fig. 5a-b) through the paintings of Ludwig Burmeister, known as Lyser, through the Plaster mold of his right hand (Fig. 6) and through the numerous letters collected from Paganini's heir.

Myron Schonendorf (3) in 1978 speculated that the Maestro could be affected from Marfan Syndrome, a hypothesis later tested by Renzo Mantero. The French doctor Bernard Marfan (1858-1942) described the syndrome affecting connective tissues only in 1896 which today holds his name and which could have struck Paganini prior to its discovery.

From the Lyser paintings Paganini's motions can be studied which can be defined as "hyper-abled". Many drawings of the painter depict the Maestro in the strangest positions. Still from those drawings, an arachnodactylia is observable, the so-called spider hand, a distinct feature of Marfan Syndrome. It is also difficult to overlook Paganini's thin chest, body slimness and the "excessive" length of his extremities in the Lyser paintings. In our opinion, an unrepeatable scenario



Figure 2. A sculpture of Niccolò Paganini



Figure 3. Villa Paganini in Gaione (Parma), Italy.



Figure 4. Funerary Monument in Parma's Villetta cemetery, Italy

occurred in him, where brain activity brilliance was matched to a hyper-mobile hand and fingers, resulting probably from a defect if judged in the strict sense of the word, which in reality gave origin to the unrepeatability of this genius.

Expert musicians exercised long hours to improve hand mobility and dexterity in order to reach greatness. We think practice can improve the velocity and precision of execution but it could never lead to the production of an impossible movement in a normal hand. No contemporary man-made instrument could allow any musician at the time to produce those "hyper-abled" gestures that Paganini could: only nature could. The physical structure of the Maestro's hands were "abnormal", the joints which were responsible for



Figure 5. a-b Paintings of Paganini's hands and violin by Ludwig Burmesister, also called Lyser



Figure 6. A plaster mold of Paganini's right hand found in Nice's Masena Museum, France

their movement needed to be hyper-lax, thus made-up of a particular connective tissue that would not limit joint excursion, like in normal subjects, in order to give origin to never seen hand movements. Inversely, the skill of Paganini could not simply be owed to a predisposition, as this would be too reductive. The rapidity of execution was surely built over time with long practice sessions. It is reported that the virtuoso played 2272 notes in 3 minutes and 20 seconds (4). Even if this were to be an exaggeration, it nonetheless gives an idea of the hand and digital agility achieved in time.

Renzo Mantero claims, and probably with reason, that Niccolò Paganini was a Marfan, a patient afflicted with a loose connective tissue syndrome resulting in different conditions such as joint hyper-laxity, palmar, long-limbed morphology with a particularly pronounced appendicular skeleton, valvular heart disease, and aneurism of the ascending aorta which can eventually cause aphonia. This latter condition was reported in the last part of Paganini's life.

A letter written by the Ragusano magistrate Matteo Niccolò de Ghetaldi (5), which met Paganini in Venice in 1824, was found. This letter, written in Slovenian, states: *"In the evening, he displayed his left hand to Doctor Martecchini who arrived the day before from Trieste. It is extraordinary what he can do with his hand. He literally bends his fingers... he can stretch his thumb as far to the left to wrap it around his little finger... he moves his hand as if there were no muscles nor bones around his joints. When Doctor Martecchini told him that his ease of movement was no other than the consequence of his senseless fury of exercising, Paganini vehemently contradicted him. Ever since childhood Paganini exercised 7 hours per day, although his vanity does not allow him to admit it. Doctor Martecchini nonetheless stood by his statement and at that moment Paganini became enraged and began yelling, and accused him of being a burglar and a thief."*

Various analyses are needed for this documented episode. Firstly, Paganini is accused indirectly of being vain by not admitting to Martecchini's opinion about the fact he has over-practiced since childhood, which not only does he reject but insists to the point of lashing out at Dr. Martecchini about his hand not being the result of zealous life-long practice sessions, but likely from an unwanted "deformity" from birth. We see no reason why Paganini should get so angry

if the doctor's assessment was true indeed. This would not have minimized his career achievements, yet the Maestro suddenly became irreversibly furious exactly because evidently since childhood he was able to make hand movements impossible to others, regardless of the amount of practice spent playing his instrument. Secondly, Dr. Martecchini describes the incredible capacity of Paganini's thumb to wrap around his little finger. This capacity, typical of Marfan's, is named the Walker sign or the so-called thumb sign (Figure 7). The third observation is the description of Paganini's "peculiar" elasticity, also depicted in Lyser's paintings, which is confirmed in Matteo Niccolò de Ghetaldi's letter.

Another important evidence to our hypothesis is the letter written by doctor Francesco Bennati (6), personal physician of the Duke of Wellington, in 1831. Bennati was also the physician that cured the Maestro's ailments for the longest time and who knew him the most: *"The extensibility of the capsular ligaments of both shoulders, and the laxity of the ligaments that connect the wrist to the forearm, the carpus to the metacarpus and the phalanx between them: who will exhibit such features and thus have the capacity to do what he does? His*



Figure 7. The Walker sign or so-called Thumb sign

hand was not larger than the proper size but he doubles its width due to the elasticity of all the structures within it... To become Paganini, musical genius was not sufficient: one needs the physical structure which he holds, a narrow chest and the extensibility he can provide to the ligaments of the joints while in motion...". Ultimately, Bennati realized that aside the brilliant mind, Paganini also possessed an "above normal" upper extremity and chest rendering him capable of accomplishing "impossible" movements with his violin.

In conclusion, we report the case of one of our patients which is a well-known musician struck with Marfan Syndrome, comparing his hand to the post-mortem cast mold of Paganini's right hand (Fig.6-7-8). The hyper-laxity is evident in the Walker sign, which was unknowingly reported about Paganini by Dr. Martecchini in his letter from 1831.

DNA analyses of the preserved and mummified body of Paganini could once and for all answer the hypothesis initially argued by Schonefeld and Mantero and further investigated by the current authors. Unfortunately, Paganini's heir have not yet reached an agreement to make this possible at present.

Nevertheless, during the romantic period Paganini left his mark when he would exhibit himself during concerts dressed all in black, entering the scene on a black stagecoach dragged by black horses. His long-limbed aspect with a particularly pronounced appendicular skeleton, his toothless mouth owed, according to some, to the mercury used to treat syphilis he contracted, and the peculiarity of his music and sound made him a unique personality, bound by a pact with the devil according to his discreditors.



Figure 8. An actual Marfan hand showing resemblance with the plaster mold

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Received: 12 July 2014

Accepted: 23 October 2014

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