A case of thrombotic thrombocytopenic purpura presented in a popular TV series

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ABSTRACT

This report outlines how a fictitious case of thrombotic thrombocytopenic purpura is narrated in a popular series broadcasted by the Italian main television channel. Personal and medical stories of a young patient grasp the attention of a doctor who has just decided to enter a new professional life.

The medical series "DOC"

The medical series "DOC nelle tue mani", produced by the company Lux Vide, is being broadcasted by the Italian TV since Spring 2020. The whole series is based on episodes narrating the personal, professional and health stories of physicians and patients of an internal medicine department of a fictitious academic hospital in Milan. The series had a great success and, with different screenplayers, is being broadcasted in other countries. The "DOC" success has many keys that include the way medical stories of the fictitious patients are chosen and introduced. Each episode generally deals with a main case and with a secondary one and each case is generally represented either by a rare disease or by a more common one having an unusual presentation. For each medical story, the medical staff is challenged by complex diagnoses to make and/or by difficult situations to handle. Not surprisingly, the episodes of the series have become matter of interest and discussion also among experienced physicians.

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Case Presentation

Some medical cases describe vascular and thrombo-hemorrhagic diseases which provide dramatic scenarios that easily captures the public attention. An example is provided in this report which refers to the main medical case presented in the second episode of the first season. In the opening scene Jacopo, a 17year-old boy, is attempting, with the help of a friend, to capture a memorable selfie picture and soon after he has to escape the chase of some policemen willing to inquire on the dangerous and highly suspect activity. In this stressful situation Jacopo suddenly manifests confusion followed by a transient loss of consciousness. The recovery is spontaneous and complete but Jacopo's friend is deeply scared by the scene and thus decides to take Jacopo to seek assistance in the local hospital.

After this opening, the episode continues inside the hospital where Jacopo disease's manifestations and personal life circumstances are intertwined with a presentation of how different physicians's competencies and attitudes try to solve the case. At first Jacopo is evaluated according to a working hypothesis of transient ischemic attack. Doctors learn that the cranial CT evaluation shows no abnormality but Jacopo's medical conditions are judged to deserve a careful observation in order to monitor his neurological status. It is also necessary to investigate about the presence of a low-grade fever, a mild thrombocytopenia and a moderate increase of C-reactive protein.

The inflammatory signs are discussed as possibly related to an infection before the presence of a monolateral temporal headache orientates toward a temporal arteritis. This suspicion leads the physicians to perform a temporal artery biopsy which is unexpectedly complicated by an abundant bleeding. This shifts the attention toward an important drop of the platelet count.

Jacopo, however, can get back to an active life inside the hospital and has frequent/long conversations, and becomes a good friend, with Andrea Fanti, a Professor of internal medicine. The latter is "Doc", the main character of the series. The script has a major focus on the "new life" of Andrea Fanti, the former chairman of the department that, due to a major head trauma, has lost the memory of his last ten-year life and has developed a more empathic attitude toward his patients. The "new" Andrea Fanti appears to be the model of an ideal physician who, by spending time with his patients and by paying great attention to their symptoms and needs, becomes able to perform difficult diagnoses. In the episode described here, Andrea has just started



his new life and makes the experience of being himself a patient, just the Jacopo's roommate. Their conversations allow Andrea to learn Jacopo's particular life circumstances paralleling the evolution of his medical history.

The final diagnosis

Jacopo's conditions over the following days are worsened by subsequent complications which include seizures, ischemic stroke, progressive renal failure and coma with physicians being unable to identify a condition explaining the coexistence of a bleeding and a thrombotic tendency (Table 1). The disease is finally identified by Andrea Fanti as a thrombotic trombocytopenic purpura (TTP). The diagnostic enlightenment comes quite occasionally to the Andrea's mind while he is looking at a Jacopo's picture that he had taken (Figure 1). In this picture he can notice on the boy's neck a purpuric manifestation having a necrotic feature. This observation provides to the physician the clue to the diagnosis and thus to recommend a treatment consisting in fresh plasma transfusions. These transfusions save Jacopo's life. The whole experience of being both a patient and a physician at the same time definitely reinforces Andrea on the decision of being a physician who will spend more time with his patients and provide to every coworker an example of empathy. At the beginning this choice is interpreted by the hospital staff



Figure 1. By looking at a picture, Prof. Andrea Fanti can notice on Jacopo's neck a purpuric manifestation having a necrotic feature. Courtesy of Lux Vide.

to be the transient consequence of a sort of mental impairment due to Andrea's brain trauma but then everybody realizes that it is a solid personal choice.

Fiction and real life

If we critically look at the case presentation outlined above we may observe that in real life matters are considerably different. The diagnosis of any disease has to meet specific confirmation criteria and this is particularly true for rare conditions such as TTP whose diagnosis requires confirmation by specific tests including the assay of ADAMTS13 activity and of a possible ADAMTS13 inhibitor.¹ It is also true, however, that in dramatic conditions we cannot wait for these types of confirmation before starting an appropriate treatment. In any case a fiction has its own requirements for keeping the viewers highly involved. There is limited room for scientific discussions. Medical doubts about diagnoses and treatments cannot be held for too long, clinical complications and any new manifestation have to suddenly come and then subside or worsen. Every diagnosis needs to be hypothesized, excluded or confirmed in a rapid sequence. Similarly, diagnostic and treatment procedures are organized and performed with an unrealistic efficiency and often even the physicians working in the internal medicine department perform a wide variety of diagnostic and surgical procedures by themselves. In the medical episode reported above one might particularly question many features of the TTP presentation. Someone would expect a less rapid regression of the transient ischemic attack or a more pronounced thrombocytopenia on hospital admission. Also purpura would likely be more pronounced in a subject having manifestations as severe as coma and renal failure and finally the proposed treatment should have been plasma exchange rather than plasma transfusion and this because a good proportion of TTP cases are immune mediated.² Finally the clinical response to treatment is certainly expected to be more gradual. But once again a disease presentation and management in a medical TV series has to be adapted in multiple ways.

Strengths and limitations

In spite of these adjustments and limitations, which have become the rule in many other medical series, DOC was followed and found to be interesting by many physicians and caregivers

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Clinical manifestation	Laboratory data	Tentative diagnosis
Loss of consciousness	CT scan	Transient ischemic attack
Headache /low grade fever	Mild thrombocytopenia, increase of CRP	Temporal arteritis
Post-surgical bleeding	-	Hemorrhagic tendency due to thrombocytopenia
Seizures	-	Epileptic manifestation
Hemiparesis	CT scan	Ischemic stroke
Oliguria	High creatinine level	Acute renal failure
Lack of response to external stimuli	-	Coma
Necrotic purpura	-	Thrombotic thrombocytopenic purpura

who publicly expressed their appreciation. The series was defined to be a stimulus to improve the working conditions of physicians and the quality of their relationship with patients. As scientific supervisor of DOC I worked in close collaboration with the screenwriters Viola Rispoli and Francesco Arlanch to prepare the script and to examine all the feedbacks and suggestions coming from the audience. In the case reported above, for example, some colleagues observed that we should have at least mentioned the possibility of diagnoses alternative to TTP. This type of suggestion was taken into consideration and applied in all subsequent episodes in order to provide a less magic idea of the whole diagnostic process. The series was also the occasion to discuss issues related to physician activity and education and other hospital and health-related issues including COVID-19 pandemia which was presented in a sort of memory and analysis of a past emergency with the main objective of reinforcing existing recommendations on how preventing the disease and its complications. These messages were prudently provided being aware that a TV series might not be the most appropriate setting for discussing each new and potentially interesting scientific finding. After the positive experience with the COVID-19 pandemia, other important health issues have been proposed and will be treated in the forthcoming season.

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