

Role of Telemedicine and Smartphone for Distant Patient Management in Dentistry: The New Way of Triage

Dear Editor

Telemedicine (TM) can be defined as the exchange of medical data through technology applications and devices,^[1] opening door to different ways in diagnosing and in taking care at different levels and ages.^[2,3]

This communication aimed to draw attention on the feasibility of technology applications in preliminary diagnosis.

A 30-year-old Caucasian woman contacted our department by telephone to explain her signs and symptoms. She reported that 3 days before she had visited the emergency department because of the appearance of lip swelling. This sign was attributed to a food allergy, and she was discharged with a 5-day therapy with prednisone and antihistamine. Also, she reported that she returned to the same institution a day later with vesicular eruptions affecting her upper lip and genital mucosa, so orogenital Herpes simplex virus 2 infection was suspected and she was prescribed valacyclovir 2000 mg/day, without any improvement.

On the basis of this report, we asked her to send pictures of oral and other manifestations by WhatsApp Messenger chat room. Telephone agreement in sending pictures was obtained, and the patient wrote in a further text message her consent in sending images for the smartphone triage. Images were self-portrait taken by patient with the smartphone camera (8 MP)^[4] [Figures 1 and 2].

Thanks to telephonic indications and pictures sent, we were able to frame the condition and set a multidisciplinary team for the visit: oral pathologist, dermatologist, and gynecologist.

She came to our attention and she signed a written consent to be visited and to undergo blood tests, and on the same occasion, the patient signed a specific form giving us the written consent for storing her photographs shared via WhatsApp Messenger. All sensitive personal information of the patient, including the photographs sent, was recorded and archived in the hospital database.

Signs observed were oral and genital painful ulcers affecting swallowing, sitting and urinating, myalgia, and temperature $<38.0^{\circ}\text{C}$. No skin rashes were observed.

Our team carried out pathological and medical evaluations, which indicated a previous vaginal

candidiasis treated with 200mg/day oral fluconazole for 2 days, prescribed by her gynecologist. To exclude previous diagnoses, serological test for immunoglobulin (Ig)G and IgM anti-HSV was performed, and it revealed only IgG positivity.

After clinical evaluation and serological test, signs were discussed and all three specialists agreed on the diagnosis of incomplete Stevens Johnson syndrome. She, therefore, received deflazacort 30mg, and complete remission was observed in 14 days, without complication.



Figure 1: Oral painful ulcers 3 days after the first administration of fluconazole



Figure 2: Lip swelling 1 day after the first administration of fluconazole

The diagnosis was actually carried out based on a clinical visit; however, the smartphone triage allowed recruiting a suitable team that was able to effectively assess signs and symptoms. Moreover it was possible, thanks to the images received, to collect data of the patient living far, and in this way, she could avoid further wasted visits.

On the basis of these findings, it might be advisable to discuss the feasibility to improve and increase this first way of communication between patient and physicians to frame diseases early and perform a well-timed diagnosis.

TM incorporates technologies and activities, offering new ways to deliver medical care; apps are downloadable on mobile phones, and they could represent a valuable help in early placement of signs^[5] and for saving costs and time for patients and healthcare facilities.

Furthermore, it might be taken into account the great opportunity to avail of TM in weak countries or in rural areas where healthcare facilities and healthcare financing are poor. Literature reports valuable works about the effectiveness of TM in early diagnosis of oral alterations^[6] and skin diseases.^[7] It is proven that the feasibility to use images sent by smartphone in performing first diagnoses or planning referral results in saving time and costs, and preserving the health of patients who are not able to easily reach healthcare facilities.^[6,8,9]

Advantages of this helpful method are surely performing a triage and the feasibility to address patients to most suited specialist avoiding time-consuming visits, unnecessary instrumental examinations, and delayed diagnoses. However, some criticism has to be taken into account, especially regarding privacy and treatment of sensitive data. In this perspective, it is advisable to inform patients about the storing of data and it would be even more desirable if healthcare adequate their privacy systems of data collected performing telemedicine. Moreover, instructing patients to send images of lesions avoiding, to the extent practicable, personal details, which can make them recognizable in photographs could be helpful in protecting privacy. Another critical point is represented by the quality of sent images, even if performances of smartphone cameras are notably improved in the last years.

By well considering the routine medical practice and clinical evidences obtained, we think it would be possible to improve several aspects of health management in terms of early diagnosis. Of course, it might be useful to enhance and to better set the privacy context to protect data shared by apps or patient's smartphones.

DECLARATION OF PATIENT CONSENT

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

CONFLICTS OF INTEREST

There are no conflicts of interest.

ETHICAL CONSIDERATIONS

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee (University of Verona, Italy) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

AUTHOR CONTRIBUTIONS

PG: Substantial contributions to the conception or design of the work; NR: the acquisition, analysis, or interpretation of data for the work; CG: Drafting the work or revising it critically for important intellectual content; ZF: Final approval of the version to be published; AM :Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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