1st World Congress of Teledermatology

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Telemedicine is an emerging field within medicine with potential to revolutionize the delivery of health care. It is defined as the use of telecommunication technologies to transfer medical information for the means of diagnosis, consultation, therapy and education in health care. Teledermatology, as a subset of telemedicine, has been increasingly adopted and recognized as a useful way to deliver specialized attention to underserved populations.

The 1st World Congress of teledermatology was arranged by the society of international teledermatology and attended by 80 participants from all continents, except Antarctica. A total of 60 teledermatological projects and working programs from more than 30 countries were presented with a variety of teledermatological aspects.

Global Teledermatology: A specific dermatologic web application for Dermatological Consultation

Soyer HP (Austria): The potential to offer developing countries qualitative

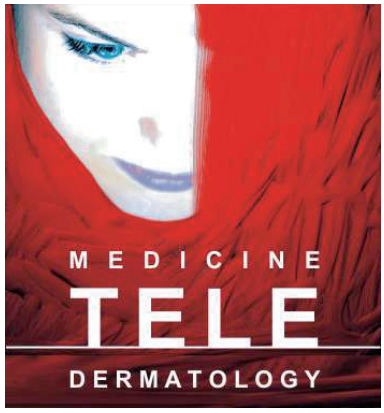

Fig. 1. Logo International Society of Teledermatology. http://teledermatology-society.org/worldcongress/

and quantitative improvements in medical care can be achieved by the use of TD. Consultation program for telemedicine in developing countries includes live video conferences and exchange of clinical and histopathological images. Digital image transfer has been expanded to dermatologists working in African countries, such as Tanzania, Ghana, Mozambique and Uganda, using the simple, adapted method of exchanging "stored and forward" digital images by email.

Technologies based on mobile phones with direct Internet access promote an increasing network between various dermatologists also in numerous African countries.

Teledermatology and Telederdermatopathology in Cambodia

Schulze HJ (Germany) presented the results of 2003 evaluation of clinical and dermatopathological slides for cases from Cambodia using the iPath server at the Department of Pathology of the University Hospital Basel. These Internet-based consultations have generated a sufficient network with rapidly increasing knowledge exchange between dermatopathologists and case submitters.

Experience of Telemedicine in Dermatology and Venerology in Ukraine

Vladzymyrskyy A (Ukraine): Use of different teledermatological modalities have been investigated.

1. Synchronous teleconsultation via IP-videoc onferences

This technology is not found effective because of a very low quality (for diagnosis) of images received from web-cameras and the necessity of using of high speed and expensive Internet channels.

2. Asynchronous/synchronous teleconsultation via email

This technology is found very effective, cheap and useful for daily clinical practice and second-opinion. Likewise synchronous teleconsultation via email after preliminary discussion via mobile phones and SMS-messages was found effective.

3. Asynchronous teleconsultation

This technology is very effective for teleconsultations, distant education, case presentations.
It is cheap, useful and easy to use via "TeleDerm" (www.telederm.org) and "iPath" (www.telemed.ipath.ch).

4. Synchronous teleconsultation via mobile phones (smartphones)

The use of up-to-date mobile phones (with digital photo cameras, GPRS-Internet, MMS-messages) is very effective for interdisciplinary teleconsul-

tations (for example for rush needs consultation of dermatologist), also for second opinion.

More details can be found at www.dermadon.org.ua and www.telemed.org.ua.

Routine Store-and-forward Teledermatology between the Faroe Islands and Roskilde, Denmark

Heidenheim M, á Steig J, Jemec GBE (Denmark): The case-mix of more than 5000 e-consultations served by store-and-forward teledermatology during the last 4 years compares with that of other institutions with regard to age, sex and diagnosis.

It is suggested that a combination of teledermatology and face-to-face consultations greatly improves the use of this technology. A significant number of patients in other institutions could be managed by this technique in order to optimise the utilisation of specialist resources described and compared with that of other institutions.

Teledermatology in Latin-American Countries

Puig S, (Spain): Multiple experiences exist in Spanish teledermatology:

- dermatological forums of discussion,
- bibliographical forums,
- educational programs,
- teleconsultation for second opinions.

A net of Excellence from the European Community (GenoMel) has also integrated Spanish as one of the main languages to develop a melanoma web site to facilitate information to melanoma patients, melanoma families, general population and doctors including some educational programs and behavioural studies in many Hispanic countries.

Fig. 2. View of Graz with Kunsthaus in center of the City

Online Discussion Forum of the International Dermoscopy Society

Argenziano G (Italy): Colleagues from all over the world share their experience with difficult patients and discuss relevant issues related to the diagnosis and management of equivocal lesions and digital dermoscopy analysis enable teledermatological consultation, which was found to provide the same diagnostic accuracy as face-to-face diagnosis.

Teledermoscopy of Skin Tumours

Piccolo D (Italy): Teledermoscopy is nowadays a well standardized technique for the diagnosis of pigmented skin lesions (PSLs). Several studies already demonstrated that the diagnostic accuracy of telediagnosis of PSLs is not significantly different from the face-to-face diagnosis if it is performed by experts.

Preliminary results showed that GPs dermoscopy triage of PSLs appears to be a feasible and reliable method if GPs are well equipped to capture and send the images and clinical data for teleconsultation.

Presurgical Teledermatology

Ferrandiz L (Spain): Teledermatology has been demonstrated as an appropriate tool for the screening of patients with skin cancer.

The Internet transmission of digital pictures and clinical information from the primary care center allows the decision-making process in these patients operated on following this fast-track surgical referral system, Presurgical teledermatology avoids unnecessary movements of patients with skin cancer, and at the same time it shortens waiting to final intervention.

Teledermatology-based Triage System for Skin Cancer

Moreno-Ramirez D (Spain): Pigmented Lesion Clinics (PLCs) were developed as a direct referral system for patients having pigmented lesions suspicious of melanoma. Store-and-forward teledermatology (SFTD) appears useful as triage methodology. 2,009 patients were included in this series, with a filtering rate of 51.2%, i.e. reducing the on-site workload.

The results of this series lead to the consideration of the store-and-forward teledermatology methodology as an effective and accurate approach for the management of patients' referrals in skin cancer clinics.

Mobile Teledermatology in a Clinical Setting

Wurm E (Austria): Mobile telemedicine, is characterized by the use of portable devices, such as cellular phones and personal digital assistants (PDAs).

The degree of concordance between face-to-face diagnoses and teledermatology with images shot with a PDA was 90%, 83% and 66%, respectively, with an average of 80%.

In conclusion, Teleconsultation of dermatologic images in a clinical setting made by cellular phone and PDA provides a good diagnostic accuracy as approximately 3 out of 4 cases are diagnosed correctly.

Development of a Teledermatology Service in an English District General Hospital

Halpern S (UK): A teledermatology service was first established in 2001 and subsequently has been developed into an in-house system since 2004. The teledermatology service utilises E-ceptionist software and IT support and is managed by three administrative personnel, 1–2 nurses who see the patients, with reporting by the three consultants.

A total of 301 patients who were discharged directly following teledermatology were sent questionnaires regarding their experience. Of the 40% who replied 71% were satisfied or very satisfied whilst 16% were dissatisfied. If given the option, 75% preferred to have teledermatology in 6 weeks rather than wait 17 weeks to see a dermatologist but 18% would prefer to see a dermatologist face to face. If the waiting time was the same, 69% of those who expressed a preference would prefer face to face consultation, but 23% would still prefer teledermatology.

Eczema Counselling via the Internet

Schopf TG (Norway): Telemedicine as a tool in home care eczema counselling has taken place since 2005. The impact of individual counselling via the internet using digital images was measured by the frequency of specialist contacts and hospital admissions during the follow up period. Other parameters included SCORAD before and by the end of the period, health behaviour and self-efficacy. Medical cost, travel cost and patient cost. Cost-effectiveness and willingness-to-pay values.

The total number of messages sent by the parents was rather low . Indicating that the initial counselling at the hospital had helped managing the eczema by themselves without further advice.

Teledermatology for Home-assistance of Psoriatic Patients

Giunta A, Di Stefani A, Chimenti S (Italy): The feasibility and acceptance of a teledermatological system for the home-care management of psoriasis were studied suggesting that teleconsulting could be highly useful in care and psychological support of psoriatic patients. The main obstacles hindering the acceptance of teledermatology reported were:

- some patients are reluctant to use telemedicine due to doubts about the usability of the system. Some patient might fear that the system implicates a non-secured route of photo-transmission.

Fig. 3. Michael Heidenheim and Danish delegates at the Opera in Graz

- data and images security and privacy, time-consumption required by
- the procedure, and, finally, some patients simply do not like computers
- A moderate interobserver reproducibility and a low agreement with face-to-face visit in the evaluation of important clinical parameters such as erythema, infiltration or scaling (PASI score) and of joint involvement were, however, observed.

Visual Search Patterns Used for Image Analysis

Jemec GBE, Heidenheim M, Engel P, Weber S (Denmark): The visual search pattern on the screen was studied using an eye-tracking system, which records the focus-point of the observer on the image, i.e. you are able to track where the test-person is focussing.

Two general patterns of visual search were identified: 1. A systematic review of the entire field of vision; and 2. Identifying key elements of the image, and subsequently scanning the image for additional information.

Store-and-forward teledermatology depends on the ability of the dermatologist to assess images and concomitant written data correctly.

A qualitative assessment was made based on the diagnostic suggestions of the participants.

Professional age appeared to be better related to the proportion of correct answers than specific experience with teledermatology. This may imply that diagnostic skills are directly transferable from a clinical setting to a teledermatological setting.

E-learning in Dermatology

Burg G (Switzerland): IT brings a new interactive dimension in all levels of professional education. E-learning is independent from time and location. It cannot replace the classical tools but makes learning more efficient by interactive feedbacks in a problem-based learning concept.

DOIT is an e-learning environment for under- and postgraduate students in dermatology. Working with these modules and functions allows the students to proceed at their own pace to study the basics of dermatology with a problem-based learning approach without disregarding the classical teaching tools.

Integrated E-learning in Dermatology

Smolle J (Austria): Since 2002 the Medical University of Graz offers an integrated undergraduate curriculum of human medicine. Dermatology is placed in the 1st year with a lecture on dermatologic diseases arising from histologically defined structures, a seminar in the 2nd year covering basics of dermatopathology and dermatopharmacology, a compulsory module on general dermatology in the 5th year, a 5-week internship in the

6th year and a non-compulsory special study module on dermatooncology.

At present, this medical e-learning system harbours more than 5,000 learning objects, and the calls of learning objects have been more than 200,000 per month.

Evaluations, outcome studies and experimental didactic studies have shown that e-learning can be a cost- and time-effective alternative to conventional teaching methods in undergraduate dermatology.

In summary, teledermatology is changing the way of health service delivery and teleconsulting to specialized centres are likely to become the standard of medical care in large parts of the world. Further studies are, however, needed to confirm accuracy, reliability and cost/effectiveness of teleconsulting systems.

Discussion forums dealing with international aspects of dermatology run by dermatologists (www.telederm.org) created by H. Peter Soyer and collaborators

http://www.teledermatology-society.org/
http://telepath.patho.unibas.ch
interactive dermatology online
www.swisdom.org
www.dermanet.ch