

Computer touch screen-based technology: a promising tool for the management of rheumatoid arthritis

Sirs,

Current guidelines recommend an early diagnosis and treatment of rheumatoid arthritis (RA) (1). Ultrasonography represents an inexpensive and non-invasive tool to identify early RA-associated joint alterations (2). A specific index to evaluate disease activity, the Disease Activity Score (DAS), is another key tool in the evaluation and management of RA (1, 3).

Although ultrasonography and quantitative assessment of disease activity are crucial in the management of RA patients, their use in clinical practice is often limited, partly due to lack of time (4). The rheumatologist's limited available time also reduces the opportunities to share clinical data with other Centres. Moreover, manually transferring data to an electronic format is often a time-consuming and error-prone exercise.

Therefore, great interest has arisen in the use of computer and touch-screen technologies for the automated collection and archiving of clinical data during RA patient examination (5-9). A similar approach may also allow the immediate calculation of disease activity indexes and comparison with the results from previous visits. Some DAS28

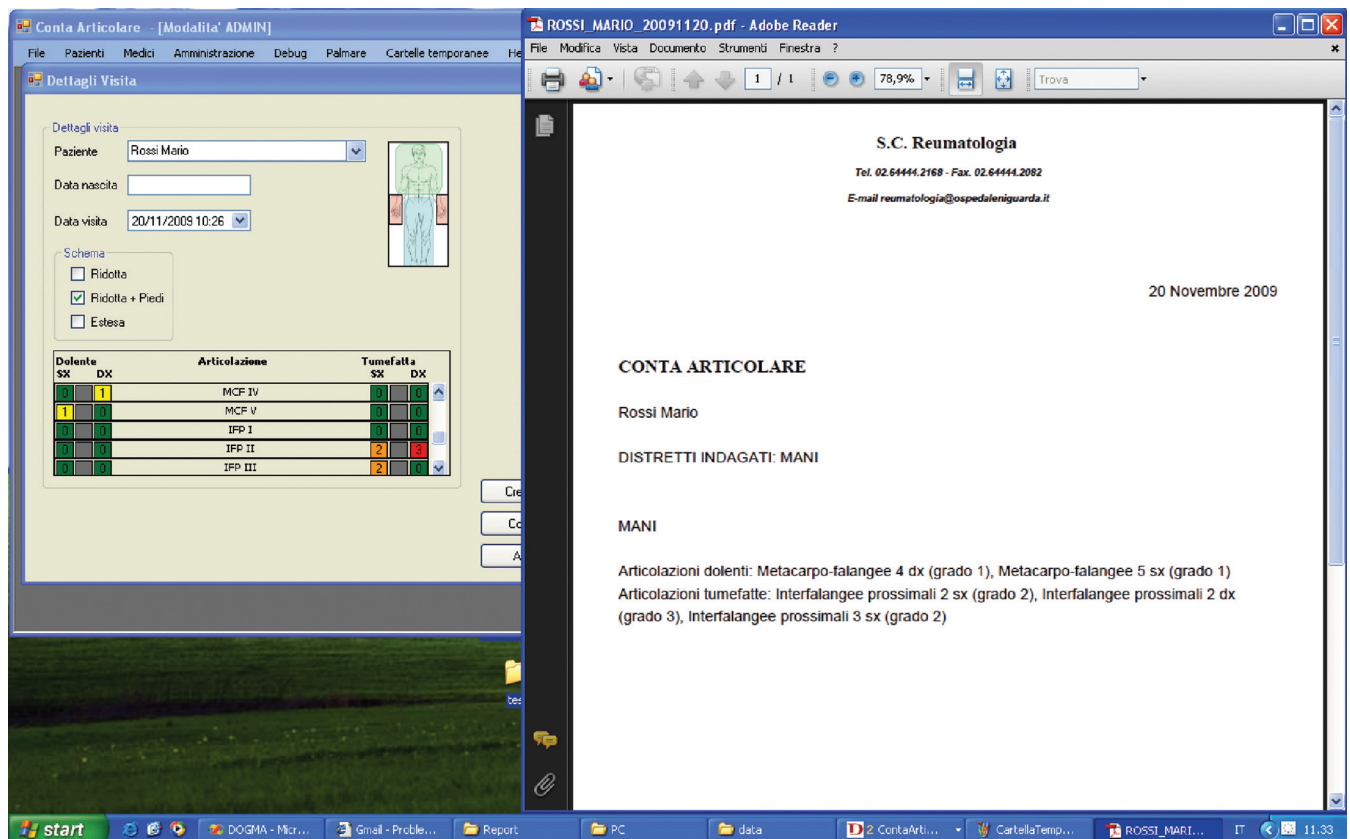


Fig. 1. Screenshots from the personal digital assistant or the PC. A) Joint count; B) Ultrasound evaluation; C) Final medical report.

C.

calculators are available in the Web (e.g. www.4s-dawn.com). In this way, real-time monitoring of disease progression becomes feasible, thus saving time and helping clinicians to make decisions. Touch-screen technologies are also a key tool for the assessment of patient-reported outcomes in RA. Salaffi *et al.* showed that collecting rheumatoid arthritis patient-reported outcomes using a touch-screen computer system is associated with good data quality, reliability and score agreement (5). However, the introduction of computer-based technologies in the daily practice of Rheumatology units is still limited.

In our Centre, we recently developed a computer touch screen-based technology to collect and manage clinical information during the examinations of RA patients. The system comprises several personal digital assistants (PDAs) connected to a central Windows-based server via a Bluetooth specific protocol. The security of the communication is ensured by authentication routines.

On the PDA, the 28- or 44-joint assessment is used for the calculation of DAS (Fig. 1A). The rheumatologist enters quantitative information on pain and swelling at each joint, and the system automatically calculates the DAS from these data. With respect to the ultrasound examination, the operator may enter information on synovial fluid/hypertrophy and power Doppler, giving a semiquantitative evaluation according to the OMERACT criteria (score 0–3 for each of the following parameters: effusion; hypertrophy; power Doppler) (Fig. 1B) (10). Collected data are then transferred to the central server, which elaborates them and provides as an output the final complete medical report (Fig. 1C).

We introduced this computer touch screen-based technology in our Centre about one year ago. Although limited by this short timeframe and the lack of quantitative comparisons with different recording systems, our experience suggests that this approach

may result in a significant saving of time for both the clinician and the patient. Moreover, it limits the errors that may occur when manually transferring data onto the PC. Lastly, and more notably, the application of this system has allowed for closer, more efficient, disease activity monitoring for each patient and, when necessary, for the introduction of changes to their disease management programme, e.g. when an insufficient response to standard DMARDs is observed.

At present, we are pursuing the implementation into our system of the possibility to collect also patient-reported outcomes (currently evaluated with hard-copy questionnaires), in order to adequately assess the status of the disease, according with the landmark experience by Salaffi *et al.* (5). If use of our computer touch screen-based technology becomes widespread over a long term, the standardised archiving of clinical data may help the development of multicentre, web-accessible databases, which might represent an important tool to facilitate the conduction and analysis of clinical trials.

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