Using computers to take patient histories

Accurate and acceptable to patients

The inadequacies of manual record systems, the inconsistencies in applying increasingly complex medical information, and a need for efficient allocation of time have created an interest in computerised history taking. Before such histories become widely accepted, however, doctors need to be clear about their indications, efficacy, and possible difficulties.

The indications for computerising all or part of the patient history are to prepare the doctor, give advice on lifestyle, improve compliance with protocols, offer diagnostic support for doctors, and help non-medical staff to make diagnoses. Such histories may be entered directly by the patients themselves or by an intermediary who may be a clerical assistant, a health professional, or a doctor. The history may either concentrate on limited topics, such as abdominal symptoms or the state of health, or may attempt to be eclectic.

Computer histories are more exhaustive than those taken in the normal way. Information may increase by half, and factual “discoveries” have been increased by an average of 5–4 new items for each patient. Such gains may take a long time to achieve. Some studies show an increased disclosure of sensitive information such as alcohol consumption to a computer, but this is not always the case; the increased disclosure may result solely because the computer is willing to ask questions that doctors prefer to avoid.

Computerised patient histories may increase the diagnostic certainty. For example, one system for diagnosing abdominal pain has been claimed to offer savings of £23m a year to the National Health Service through avoided operations and nights in hospital, while another could reduce admissions to coronary care units by a sixth. These gains occur particularly with narrow topics; if the net is dragged too wide the diagnostic accuracy drops.

Some possible difficulties need to be considered. If doctors use computers themselves either to enter or to review patient histories there might be an adverse effect on their consultations. The results of studies on the use of computers by general practitioners during consultations have, however, been broadly reassuring, although the studies did not look at history taking itself. The use of computer terminals during consultations still occurs in only 12% of general practices, but this will greatly increase with the new free computer systems, one of which will offer a module for history taking. If most of the use occurs before rather than during the consultation any adverse effects on the consultation should be mitigated.

Patients generally have a positive attitude to using computers in health care, and this remains positive after they have given their history to a computer. Some rules for taking histories by computer have recently been proposed by Brownbridge et al. The time taken to complete a computer questionnaire varies according to age and education, and this should be taken into account in designing systems for use by patients. The system users need to be closely consulted, and any effects, particularly on the time spent by staff and patients, should be carefully considered.

The computer history should be an adjunct to not a substitute for the conventional medical interview. Computer histories may miss important information by relying on closed structured questions; they miss non-verbal clues; and they are impersonal. The use of computers during the consultation should be carefully managed to minimise interference with rapport. If used for diagnostic support the computer should be used in well defined and systematically evaluated clinical topics.

Early visions of computers replacing doctors are now seen as misplaced, although doctors may still see computers that help with diagnosis as competitors. Computers may, however, be used acceptably to gather accurate information and to improve medical decisions without diminishing the role of the doctor. A computer should “do for the doctor what a well designed golf course does for the golfer. It should flatter his strengths, reward his good efforts, and—instead of harshly punishing his errors—so motivate him that he seeks to improve his own performance.”

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Treating the ascites of cirrhosis

Diuretics are usually better than paracentesis

Paracentesis was abandoned as treatment for tense ascites in the 1950s. This was because of the arrival of effective diuretic drugs and concern over the complication of abdominal paracentesis, particularly sepsis, hypotension, encephalopathy, and electrolyte derangement. The haemodynamic and electrolyte abnormalities were attributed to hypovolaemia caused by the rapid reaccumulation of fluid within the abdominal cavity. Treatment with diuretics may also cause complications—encephalopathy, hypotension, and uraemia. The high frequency of these complications reported in earlier studies has, however, been greatly reduced by paying close attention to electrolyte concentrations and using distally acting diuretics such as spironolactone rather than loop diuretics such as furosamide. Limiting the rate of diuresis to a weight loss of not more than 0.5 kg daily is particularly important in preventing complications. This means, however, that symptomatic relief is often delayed and the period of immobility increased compared with paracentesis, which has led to the reconsideration of paracentesis as a form of treatment.

The renewed interest in paracentesis stems from the work of Quintero et al from Barcelona. In 1985 they reported the results of a randomised controlled trial in which a daily 5-6 litre paracentesis together with an infuson of 40 g albumin was compared with treatment with diuretic drugs (spironolactone 200-400 mg and frusamide 200-400 mg daily). Ascites was controlled completely in all of the patients treated by paracentesis but in only 28 of the 34 treated with diuretics. Mean weight loss was the same in both groups, but the stay in hospital was 12 days for those having repeated paracentesis and 34 days for those given diuretics. Important complications (hypotension, renal failure, hypoaesthesia, and encephalopathy) were observed in 15 of those given diuretics and nine of those treated with paracentesis. This difference was not significant, and there was no difference in rates of readmission and in mortality after 21 weeks. Complications were seen more often in those treated with diuretics in this study than would be expected from previous studies, and this may be explained by the high doses of diuretics used. In a previous study from the same centre lower doses were used (frusamide 160 mg and spironolactone 300 mg), with fewer complications (five out of 40 patients), and yet only two patients failed to respond.

Kao et al examined the effects of large volume (5 litre) paracentesis without replacement of albumin in 18 patients with tense ascites and peripheral oedema, and the only complication was leakage from paracentesis sites in two patients. There were no important changes in plasma volume in the 48 hours after paracentesis, although there was a small but significant rise in serum creatinine concentration. Peripheral oedema may protect the intravascular space by allowing mobilisation of fluid from the periphery.

Simon et al examined the effect on central haemodynamics and renal function of removing large volumes of ascitic fluid. A single 4-15 litre paracentesis (8 litres in 10 patients) was performed in 13 patients (seven of whom had peripheral oedema) without replacement of albumin at a rate of 2 litres every 1-5 hours. There was a prompt and sustained increase in cardiac output with no change in mean arterial pressure. Central venous and pulmonary capillary wedge pressure fell