

Audit of medical inpatient examination: a cry from the joint

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ABSTRACT – We undertook an audit of 200 general medical inpatients in a teaching hospital to investigate how often the locomotor system is omitted from routine medical clerking, and the impact this may have on patient care. The 104 men and 96 women (mean age 66; range 16–91 years) were interviewed and examined in the non-critical phase of admission; 42.5% had locomotor symptoms and 53.5% locomotor signs. Common problems were small or large joint osteoarthritis (39%), soft tissue lesions (9%), cervical and lumbar spondylosis (5.5%) and fibromyalgia (5%); 12% had more than one locomotor diagnosis. However, locomotor symptoms and signs (positive or negative) were recorded in their hospital notes in only 14.5% and 5.5% respectively. This compared poorly with recorded examination of other systems and regions (eg cardiovascular 100%; respiratory 99.5%; abdomen 99%; nervous system 77%; skin 13%; female breasts 13%); 92% of rheumatic lesions had been missed and treatment of symptomatic patients was omitted or considered inadequate in 94%. It is apparent that, despite a high frequency of locomotor disorders, locomotor system screening is often omitted from routine medical clerking. Many missed conditions are both significant and eminently treatable. Such discrepancy compared with screening of other systems requires consideration during planning of undergraduate training.)

'I can see nothing,' said I, handing it back to my friend.

'On the contrary, Watson, you can see everything. You fail, however, to reason from what you see...' [1]

There is a strong impression that the locomotor system is often omitted from routine medical patient clerking and examination, perhaps reflecting the low priority generally allotted to undergraduate training in rheumatology [2–9]. Such omission from patient screening would have little consequence if there were few symptoms or little functional impairment relating to rheumatological abnormality. There is, however, ample evidence that locomotor disease is a common cause of symptoms, disability and handicap in general practice [2, 10–13] and in patients, particularly the

elderly, who are hospitalised for acute medical conditions [14–17].

In the present survey we examined patients admitted for acute, non-rheumatological conditions to general medical wards of a teaching hospital, to determine the frequency of locomotor disease and to audit whether this was being recorded or treated by the medical teams. We compared this with the frequency of recorded examination findings for other systems. As far as we are aware, this is the first such audit of medical diagnosis and recording performance related to the locomotor system.

Patients and methods

Local ethics committee approval was obtained. All consultants participating in acute medical takes at the City Hospital, Nottingham, but not their junior staff, were aware that the study would be undertaken on their wards without prior notice. The hospital also has acute admission wards for geriatric patients, and a separate rheumatology ward.

The patients (104 men and 96 women; mean age 66, range 16–91 years) were studied during 4 half-day surveys (conducted at weekends) over a 3 months period, taking in a single change of junior staff. On the day of each survey the ward sisters told us which patients were in the non-urgent, convalescent phase of admission. Patients who were still acutely ill or were for some reason unable to give consent to examination were not included. No one was excluded in terms of age, sex, or reason for admission to hospital. All patients on the ward at that time were included for study. Each patient was briefly questioned and examined for symptoms and signs of locomotor abnormality, and all case notes and charts were reviewed to see whether locomotor examination findings (positive or negative) were recorded, and whether the patient had received treatment intervention for locomotor disease (eg drugs, injections, physiotherapy). Examination findings (positive or negative) for the cardiovascular system, respiratory system, abdomen, central nervous system, eyes (including fundi), skin and breasts (women) were also noted (present or absent). Rheumatological diagnoses were based on clinical findings together with radiographs or investigations previously obtained.

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Results

The most common reasons for hospital admission were respiratory infection/obstructive airways disease (24%), myocardial pain/infarction (16%), acute cerebral episode (12%), cardiac arrhythmia/failure (9%), malignancy-related problems (9%) and diabetic complications (6%). No patient had been admitted primarily for rheumatological reasons.

On direct questioning, 42.5% of patients (32% of men, 54% of women) had locomotor symptoms (pain with or without stiffness). Abnormal locomotor findings were present in 53.5% (46% of men, 61% of women). The principal rheumatological diagnoses are outlined in Table 1. As expected, we found many patients with symptomatic large and small joint osteoarthritis, mechanical neck and back pain, and 'soft tissue' periarticular lesions. Of the women patients, 10% had symptoms (including widespread musculoskeletal pain and stiffness, fatigability, non-restorative sleep) and signs (marked tenderness in multiple defined 'tender point' regions but not in 'control' areas) fulfilling criteria for fibromyalgia syndrome [18]; 3 women had classic or definite rheumatoid arthritis according to ARA criteria [19], and 2 elderly women had diuretic-induced gout. In addition to primary rheumatological disease, we also noted

rheumatic problems associated with, or consequent upon, general medical conditions: for example, hemiplegia-associated 'frozen' shoulder (3), diabetic cheiroarthropathy (3), and lower limb synovitis associated with Crohn's disease (1), short bowel syndrome (1) and sarcoidosis (1). Eighty-three patients (41.5%) had one rheumatological problem; 12% had two or more rheumatological diagnoses.

The patients' notes (including all clerking and notes relating to the current admission) mentioned locomotor symptoms in only 14.5%, and recording of locomotor findings in 5.5%. We considered that locomotor findings were accurate in 45% of cases. As judged by the notes, a locomotor problem had been recognised in only 9/107 symptomatic patients; in 92% the diagnosis had been missed or ignored. Nevertheless, 19% of patients received intervention (analgesics, non-steroidal anti-inflammatory drugs, appliances, physiotherapy) related to their locomotor symptoms. But 94% of symptomatic patients received either no treatment or treatment that we considered to be inadequate or inappropriate.

The frequency of recorded examination findings for other systems and regions is shown in Table 2. Findings (positive or negative) for all these systems or regions were more commonly recorded than locomotor findings (5.5%).

Table 1. Rheumatological diagnoses in the 200 patients (104 men, 96 women)

Diagnosis	Men	Women	Overall frequency (%)
Osteoarthritis	37	41	39
Hand	17	21	19
Knee	12	20	16
Hip	5	5	5
Shoulder	4	3	3.5
Other	3	1	2
Cervical/lumbar spondylosis	5	6	5.5
Rheumatoid arthritis	0	3	1.5
Gout	1	2	1.5
Fibromyalgia	0	10	5
Periarticular lesions			
Rotator cuff lesions	3	3	3
Peripheral nerve entrapment	0	5	2.5
'Hemiplegia shoulder'	3	0	1.5
Trochanteric bursitis	0	2	1
Shoulder-hand syndrome	1	0	0.5
Miscellaneous			
Knee/ankle synovitis (1 Crohn's, 1 short bowel syndrome, 1 sarcoid)	2	1	1.5
Diabetic cheiroarthropathy	1	2	1.5
Symptomatic osteoporosis	1	1	1
Gross generalised hypermobility (1 Marfan's)	0	2	1
Steroid myopathy	1	1	1
Sclerodactyly	0	1	0.5

Discussion

At first sight it may seem unfair to compare locomotor clerking and examination skills between junior 'on-take' doctors and rheumatologists. However, we deliberately studied patients only during the later, non-emergency phase of hospitalisation, usually after they had been assessed by junior staff on several occasions and had been reviewed on senior staff rounds. Furthermore, the records review included all entries for that admission and was not restricted to the initial clerking. Only a 'minimal' locomotor history and examination was performed by the investigators, looking predominantly for pain and gross, rather than subtle, locomotor signs.

Table 2. Frequency of recorded examination findings in patient notes ($n = 200$)

System/region	Patient notes with recorded examination findings (%)
Cardiovascular system	100
Respiratory system	99.5
Abdomen	99
Central nervous system	77
Eyes/fundi	23
Skin/mucosae	13
Breasts (women: $n = 96$)	12.5
Locomotor system	5.5

The apparently high frequency of locomotor symptoms and signs, particularly in women, was not unexpected. A similar high frequency of symptomatic locomotor disorders, predominantly in women and increasingly associated with age, has been demonstrated in surveys of patients on acute medical [14] and geriatric [15–17] wards, in morbidity studies in general practice [10, 11] and in population surveys for specific rheumatological conditions [13, 20–23]. Indeed, the existence of acute geriatric and rheumatology services in the same hospital implies that, if anything, this study may have underestimated the overall frequency of rheumatological disorders in acute medical admissions to the hospital. The spectrum and frequency of individual rheumatological problems was also consistent with previous surveys [10–18, 20–24], common lesions being osteoarthritis of small and large joints, periarticular soft tissue lesions, and cervical and lumbar spondylosis.

Despite the high frequency of locomotor symptoms and signs, it was apparent from patient records that the medical teams missed most of the locomotor disorders. Even in the few cases where a history of locomotor pain had been elicited, it was usual to find no record of any accompanying locomotor examination. In addition to primary rheumatological conditions, some of the missed locomotor disorders were directly related to the admitting condition (eg hemiplegia-associated painful shoulder, enteropathic arthritis, diuretic-induced gout), and omission of locomotor findings in these situations is perhaps the more surprising. The same holds for presentations in which the differential diagnosis included locomotor disease, for example, calf pain and swelling, possibly arising from deep vein thrombosis or ruptured popliteal cyst, or left upper arm pain which might have been of cardiac, cervical or shoulder origin. In almost all such cases no regional locomotor examination had been performed.

One must, of course, be cautious in translating assessment of case records into quality of patient care. Nevertheless, after looking through all notes and treatment records, and directly interviewing the patients themselves, we considered that only 6% of symptomatic patients were receiving appropriate treatment. Many locomotor disorders in this survey, if recognised, would have been amenable to simple therapy (eg local injection for periarticular lesions and synovitis, physiotherapy, appliances, etc). In some instances (eg peripheral nerve entrapment) lack of recognition and treatment could result not only in persistence of symptoms but in progressive functional impairment which may be irreversible. Although not the primary reason for hospitalisation, it is perhaps unfortunate that, during otherwise expert clinical care, such locomotor problems are not being recognised and treated, particularly since their diagnosis is largely made on clinical grounds alone without the need for elaborate or expensive investigation. It was of interest that fibromyalgia syndrome, although affecting 10% of women patients, still appears to be a condition unrecognised on medical wards (all cases were missed

in this survey). Such omission may not be without consequence in terms of inappropriate investigation and treatment for symptoms such as chest pain, paraesthesiae, headache, and 'irritable' bowel disturbance [18, 24, 25]

We specifically involved all medical firms and wards (taking in a single change of junior staff), to obtain a broad spectrum of patients and junior doctors, and to reduce bias from specialist interests of individual firms. We included other systems in the audit so as to rule out generally poor or abbreviated clerking and to permit comparison of the frequency of recording of major and 'minor' system examination. The admitting diagnoses and age range of patients suggest that they were not unrepresentative of general medical inpatients, and the records for non-locomotor examination, the teaching hospital setting, and the excellent local reputation of junior staff involved, support the contention that these doctors are of high professional calibre. It is therefore likely that the infrequent inclusion of locomotor system enquiry and examination [2–9] reflects medical teaching philosophy and practice [2–9] rather than incompetence or slackness on the part of doctors.

The almost universal inclusion in the notes of cardiovascular, respiratory and abdominal findings (positive or negative) is likely to stem from the 'clockwork' instilled into undergraduates while learning clerking skills in the first clinical year. Teaching on examination of the locomotor system, however, usually comes later when the undergraduate's system of basic clerking has largely crystallised, and incorporation of new skills into the 'clockwork' is probably more difficult. We suggest that the frequency of locomotor disorders in the present study would support inclusion of locomotor examination teaching earlier in the undergraduate curriculum. Furthermore, although the merits of the 'system review' continue to be questioned [26], if such an approach is to be used (as it obviously is by junior staff in the present study) the locomotor system should probably be included if it produces symptomatic findings in 42% of medical inpatients. Unless locomotor conditions are specifically considered they will easily be missed. To quote Sherlock Holmes again:

'You have not observed. And yet you have seen.' [27]

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