Health Service Research

Acute low back pain management in primary care: a simulated patient approach

Alain Lorenzo, Pauline Schildt, Mathieu Lorenzo, Hector Falcoff and Frédérique Noel

Faculty of Medicine, Department of General Practice, Université Paris Descartes, Sorbonne Paris Cité, Paris and
Faculty of Medicine, Department of General Practice, Université de Strasbourg, Strasbourg, France.

*Correspondence to Alain Lorenzo, University Paris Descartes, Department of General practice, Faculty of Medicine, 24 rue du Faubourg Saint Jacques, 75 014 Paris, France; E-mail: alain.lorenzo@parisdescartes.fr

Abstract

Background. Recent medical guidelines for acute low back pain (aLBP) are unevenly followed. Based on financial criteria or associated with a desirability bias, studies incompletely describe the actual management provided by general practitioners (GPs) in terms of diagnosis, treatment and prevention of progression towards chronicity.

Objective. To compare actual practices of French GPs for aLBP management with clinical guidelines.

Methods. A young simulated patient (SP) consulted, using a single scenario of aLBP, in 30 primary care practices in the Paris region.

Results. Heterogeneous data were collected according to the grid items: during the questioning, 29 GPs (97%) asked for age and 1 GP (3%) for pregnancy; during the clinical examination, 21 GPs (70%) asked for spinal stiffness and 3 GPs (10%) for cauda equina syndrome. Non-steroidal anti-inflammatory drugs were prescribed by 27 GPs (90%). Imaging (2 GPs or 7%) and physiotherapy (3 GPs or 10%) was rarely prescribed. A sick leave was prescribed by 22 GPs (73%). Twenty-seven GPs (90%) reassured the patient.

Conclusion. aLBP management was in line with international guidelines in terms of clinical examination, physiotherapy and imaging prescriptions and some risk factors for chronicity were taken into account. However, patient questioning was brief, and drug and sick leave prescriptions did not meet international guidelines. The SP approach seems to be a useful tool for assessing actual GP practices.

Key words: Consultation, low back pain, practice management, primary care, quality of care, teaching methods.

Introduction

The estimated annual direct cost of treating low back pain (LBP) in France is €2.7 billion (1.5% of the overall health-care costs) (1). Seventy-five per cent of these costs are due to chronic LBP (cLBP) (i.e. back pain for more than 12 weeks), which affects 8–10% of patients with LBP (2). These costs are mainly related to financial compensations for sick leaves, LBP being the leading cause of sick leave attributable to work-related accidents in France (1). The main known risk factors for chronic pain include a previous history of LBP, work dissatisfaction, presence of sciatica, severity of the functional disability and, to a lesser extent, the poor overall psychological status, an unsatisfactory social context, age and female gender (3,4).

The difficulty in making a definitive diagnosis for most presentations of LBP has given rise to the term of ‘non-specific LBP’, which is considered benign and can be managed in a primary care setting.

For guiding the diagnosis of non-specific LBP, the current consensus (5) recommends to ask specific questions during the first consultation to help identifying the mechanical or inflammatory nature
of the pain, the presence of a triggering factor, the pain intensity and impulsivity (aching pain). Duration and history of the lumbar disorder should also be investigated. Clinical examination should be carried out to identify a pain-relieving posture, a Lasègue sign, the presence of paraspinal muscle contractures and pain on spinous pressure. Extensive physical examination is necessary in the presence of ‘red flags’ (i.e. signs of a potential severe spinal pathology). In the absence of red flags, imaging is not helpful for the diagnosis. Finally, ‘yellow flags’ (i.e. psychological factors known to increase the risk of developing chronic pain) should also be taken into account. For acute LBP (aLBP) management, the recommended first-line treatment combines acetaminophen (paracetamol) with counselling, mainly based on patient reassurance.

Epidemiological studies of aLBP have clearly shown that some psychosocial factors were associated with a poor prognosis. Although the diagnosis of non-specific LBP has been made, identifying early risk factors for cLBP would allow targeting a chronicity risk group. Although international evidence-based recommendations are available for the diagnosis and management of non-specific aLBP (5,6), their implementation is likely to be suboptimal and differs from one country to another (7–11).

The first GP consultation for LBP is crucial because it allows ascertaining the diagnosis of non-specific LBP and is devoted to patient counselling. In addition, several data should be collected for diagnosis and management during this time. Describing GP real-life clinical practice for aLBP during the first consultation raises methodological issues. Retrospective studies of patient records are incomplete because GPs do not systematically report all information (12). Observational studies aiming at assessing health-care costs (drug and imaging prescriptions, sick leave number and duration) do not usually assess the overall consultation, in particular the time devoted to health prevention and education (10). The investigations carried out (overall management, empathy, care coordination and follow-up) are often based on self-questionnaires and show social desirability and Hawthorne effect biases (13). Case vignettes, although realistic and comprehensive in their description and questioning, are probably not representative of the real life and answers are self-reported and may not reflect the real skills of the GP (14).

Simulated patient (SP) studies are derived from techniques assessing medical student skills (14–16). They probably more accurately describe GP actual practices and avoid the desirability bias. They have been used in several fields, including contraception (17) and rheumatologist practices (18). However, they have not yet been used to assess GP practices for aLBP (19).

The aim of this SP study was to compare the actual practices of French GPs from the Paris region for the management of a first aLBP episode with clinical guidelines.

Methods

Simulated patient approach

This approach, which is not widely used in France, consists in addressing to a GP a subject previously trained to play a disease scenario, to assess how GPs who practise under usual conditions manage diseased patients, since they are not aware that the patient is simulated. The study was conducted between 28 April 2013 and 7 July 2013.

Design of the clinical case

Two GPs, experienced in lumbar disorder management, designed the case based on their experience and a review of the literature (4,5).

The SP was a young GP experienced in LBP management who had participated in the scenario design. She had practised alone for weeks to integrate the clinical case. Then, she had been trained by five GPs on the questioning and clinical examination to play a consultation as naturally as possible. They had considered that the case was credible (Supplementary Material).

The characteristics used had to be suggestive of common LBP: absence of red flags, pain for less than 48 hours with triggering factor in a young subject. Yellow flags were integrated into the scenario, to allow their assessment. It was a new patient so that the GP consulted had to create the medical record and therefore to record her complete history.

- Lifestyle and occupation (medical secretary) were similar to those of the SP so that she was able to answer GP questions as spontaneously as possible; the patient had no specific family issues.
- The factor that triggered LBP was the fact of ‘having carried a heavy load during a move’ 2 days earlier. The patient had taken 500 mg paracetamol (little effective). Symptoms were simple, unrelated to potential ‘red flags’.
- Criteria selected to simulate chronicity risk were being a woman, living in Paris suburbs, having a young foster child, and being stressed about commuting times, working hours and childminder schedules. She worked in a hospital in Paris and had a highly sustained work pace and result-based obligations.
- A recent move to Paris suburbs explained the presence of this new patient in the practice.

Data collection grid

The grid was designed to collect the different management approaches possible and compare them with the optimal approach as defined by the guidelines (Supplementary Material) (4,5). It was divided into eight items:

- Administrative situation of the GPs: practice location and type.
- Questioning: data on the patient health status (age, occupation, history contraception) and data focused on the pathology (history of LBP and lumbar surgery, intake of analgesics, sport activities.)
- Pain characteristics: possible triggering factor, schedule, intensity measured using a visual analogic scale for pain (VAS) or another scale, pain-relieving postures, presence of sciatica and impulsivity at coughing
- Clinical examination: weight, search for spinal deformity, classical signs on spinal examination (Schöber, Lasègue, lateral inflexion, spinous pressure pain, paravertebral muscle contracture), signs of sacroiliac impairment, signs of neurological impairment (cauda equina syndrome, lower limbs).
- Additional tests: prescription of standard X-ray, scan, MRI and blood test.
- Treatments prescribed: medications (analgesics, non-steroidal anti-inflammatory drugs (NSAIDs), muscle relaxants), physical therapy (physiotherapy, osteopathy) and sick leaves.
- Investigation of risk factors for chronicity: general information (marital status, children, occupation), data on work environment (postures, work atmosphere, stress, occupational relationships) and medical history (sciatica, depression, symptoms experienced, functional disability).
- Advice given to avoid chronicity were based on the ‘back book’ messages: recommending avoiding bed rest, continuing activities, encouraging to exercise more and reassuring the patient (disease benignity, duration and intensity).
The SP had to fill the data collection grid immediately after the consultation to avoid omissions.

**GP selection and sample size**

It was a pilot exploratory study. We estimated that 30 consultations were needed. We assumed that 25% of GPs would accept to participate so that we should select 120 GPs. In order to match our sample with the GP geographic distribution in Paris suburbs, the practice locations were randomly drawn and then the GPs were randomly drawn (Supplementary Material). The 120 GPs received a letter (see Supplementary Material) to invite them to participate in a SP study without specifying the study subject. It was explained that the patient will pay the consultation and will not be reimbursed by the health insurance. The week after the letter was sent, GPs were contacted by phone, in random order, to determine if they would accept to receive a SP within 6 months. The study flow chart is presented in Figure 1.

**Results**

**GP participation**

Eighty-six GPs were contacted (62 in Ile de France and 24 in Paris) and 30 accepted to participate in the study, corresponding to a participation rate of 30/86 (34%).

Reasons for refusal were: a lack of interest (40%), a lack of time (20%), changes in occupational orientation and retirement (20%). Twenty per cent of GPs could not be contacted.

The sample spontaneously matched the national distribution by GP gender in France (28% of women—IRDES 2009).

**Observation of practices**

During the questioning (Table 1), the most commonly collected data were: age (29 GPs or 97%), general history (28 GPs or 93%), occupation (24 GPs or 80%), history of LBP (24 GPs or 80%) while GPs were less interested in the following information: ongoing pregnancy (1 GP or 3%), use of contraception (10 GPs or 33%), intake of analgesics (12 GPs or 40%) and practice of a sport (12 GPs or 40%).

Regarding pain, the collected data were more focused on the presence of a triggering factor (30 GPs or 100%), type of onset (25 GPs or 83%), symptom duration (23 GPs or 77%) and presence of sciatica (22 GPs or 73%). Pain intensity (0 GPs or 0%), pain-relieving postures (1 GP or 3%), the impulsive nature at coughing (3 GPs or 10%) and inflammatory component of the pain (9 GPs or 30%) were more rarely assessed.

Clinical examination (Table 1) was mainly focused on paraspinal muscle contracture (27 GPs or 90%), spinous pressure-induced pain (36 GPs or 70%), signs of spinal stiffness (21 GPs or 70%), study

---

**Figure 1.** Study flow chart: Selection of 30 GPs from Paris area
Table 1. Observed practices (30 GPs): questioning, clinical examination, treatment (April 28–July 7, 2013)

<table>
<thead>
<tr>
<th>Data collected during the questioning</th>
<th>N = 30</th>
<th>Signs investigated during the clinical examination</th>
<th>N = 30</th>
<th>Treatments prescribed</th>
<th>N = 30</th>
<th>Additional tests prescribed</th>
<th>N = 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal details</td>
<td>27 (90%)</td>
<td>Weight</td>
<td>25 (83%)</td>
<td>Back examination</td>
<td>6 (20%)</td>
<td>X-ray Scan MRI Blood test</td>
<td>24 (80%)</td>
</tr>
<tr>
<td>Age</td>
<td>29 (97%)</td>
<td>Type of onset</td>
<td>25 (83%)</td>
<td>Static contracture</td>
<td>27 (90%)</td>
<td>Spinal stiffness</td>
<td>21 (70%)</td>
</tr>
<tr>
<td>Occupation</td>
<td>10 (33%)</td>
<td>Impulsive pain of postures</td>
<td>1 (3%)</td>
<td>Pain-relieving positions</td>
<td>1 (3%)</td>
<td>Scoliosis deformity</td>
<td>6 (20%)</td>
</tr>
<tr>
<td>Sport practice</td>
<td>18 (60%)</td>
<td>History of lumbar surgery</td>
<td>12 (40%)</td>
<td>Intensity VAS or another</td>
<td>28 (93%)</td>
<td>Signs of sacroiliac impairment</td>
<td>10 (33%)</td>
</tr>
<tr>
<td>History of LBP</td>
<td>12 (40%)</td>
<td>History of surgical history</td>
<td>12 (40%)</td>
<td>Impulsivity at coughing</td>
<td>25 (83%)</td>
<td>Presence of a sciatica</td>
<td>22 (73%)</td>
</tr>
<tr>
<td>Overall medical and surgical history</td>
<td>24 (80%)</td>
<td>History of analgesics</td>
<td>12 (40%)</td>
<td>Intensity VAS or another</td>
<td>28 (93%)</td>
<td>Presence of sacroiliac impairment</td>
<td>10 (33%)</td>
</tr>
<tr>
<td>Data on pain features</td>
<td>30 (100%)</td>
<td>Grade of pain</td>
<td>27 (90%)</td>
<td>Grade 1</td>
<td>21 (70%)</td>
<td>Signs of sacroiliac impairment</td>
<td>15 (50%)</td>
</tr>
<tr>
<td>Data on work features</td>
<td>27 (90%)</td>
<td>Grade of pain</td>
<td>24 (80%)</td>
<td>Grade 1</td>
<td>21 (70%)</td>
<td>Signs of sacroiliac impairment</td>
<td>10 (33%)</td>
</tr>
<tr>
<td>Data on pregnancy</td>
<td>10 (33%)</td>
<td>Grade of pain</td>
<td>24 (80%)</td>
<td>Grade 1</td>
<td>21 (70%)</td>
<td>Signs of sacroiliac impairment</td>
<td>10 (33%)</td>
</tr>
</tbody>
</table>

Some findings showed a compliance with the current good clinical practices. Indeed, in our sample, the GPs seemed to have integrated some recommendations of the back book and applied them from the first consultation. The literature shows that the level of fears and beliefs with respect to physical and occupational activities affects greatly the patient feeling of the disease and the therapeutic approach of the GPs (20). These results suggest that the GPs consulted play a useful role in preventing the risk for chronicity from the first consultation. GPs prescribed many sick leaves but with a shorter mean duration than previously reported (3.8 versus 7.4 days) (10). The risk of progression has been shown to increase if x-rays are immediately prescribed (21). In our study, the non-prescription of imaging at this stage of the lumbar disorder was in accordance with the international recommendations. Physical therapy was rarely prescribed, which was in line with the current recommendations for the “first consultation” (3) and this finding shows an improvement in GP habits as it has been reported in 2004 that 31% of GPs prescribed it (10).

Discussion

Synthesis and interpretation

This SP study was the first focused on aLBP management conducted in primary care practices.

of tendon reflexes and Lasègue sign (17 GPs or 57%). The weight (6 GPs or 20%), a cauda equina syndrome (3 GPs or 10%) and signs of sacroiliac impairment (7 GPs or 23%) were neglected. A spinal deformity (15 GPs or 50%) was investigated.

Regarding imaging (Table 1), no imaging study was prescribed except for a standard x-ray prescribed by 2 GPs (7%).

A sick leave (Table 1) was often prescribed (22 GPs or 73%) with a mean duration of 3.8 days (1–9 days). In cases where a sick leave was not prescribed (8 GPs or 27%), GPs presented it as unnecessary (5 GPs or 62%) or unjustified because of the proximity of a weekend (3 GPs or 38%).

Physical therapy (Table 1) was fairly prescribed and included osteopathy (3 GPs or 10%) and physiotherapy (3 GPs or 10%). Two GPs prescribed postponed sessions in the absence of improvement and one GP recommended initiating immediately physiotherapy.

Regarding treatment prescription (Tables 1 and 2), 27 GPs (90%) prescribed NSAIDs. Alone (1 GPs or 3%) or in combination with grade 1 and/or 2 analgesics and/or muscle relaxants (26 GPs or 87%). They were mainly prescribed at anti-inflammatory doses (25 GPs or 85%) but also at analgesic doses (4 GPs or 15%). Five GPs (18%) combined NSAIDs with a Proton Pump Inhibitor (PPI).

Risk factors for chronicity were investigated (Table 3). The main reported risk factors for chronicity were the presence of sciatica (27 GPs or 90%) during the questioning and/or during the clinical examination, occupation (24 GPs or 80%), marital status (16 GPs or 53%). The work environment, including occupational relationships (0 GP or 0%), atmosphere (1 GP or 3%), postures (2 GPs or 7%), and assessment of the functional disability (0 GPs or 0%), was neglected. Same results were found for the assessment of the previous or current psychological status (1 GP or 3%) and symptoms experienced (0 GP or 0%).

Progression towards chronicity was prevented by reassuring the patient (27 GPs or 90%) with an accurate and benign diagnosis and trivialization of the progression duration. 26 GPs (87%) advised to avoid bed rest, and 17 GPs (57%) recommended continuing normal activities. 10 GPs (33%) encouraged the patient to exercise more.
Other findings reflected practices far from the current recommendations. For instance, GP questioning about “pregnancy” and “contraception” was usually absent. Since it was the first consultation of a new patient, this absence of GP specific investigation raises questions. Indeed, NSAIDs are only contraindicated after 24 week of gestation, which corresponds to a « visible » pregnancy. Despite the French recommendations (22), the « red flags » were not very often investigated (fever, poor general health status, inflammatory nature of the pain) but the overall patient characteristics, her age and apparent good health status could have directly guided towards aLBP, suggesting an intuitive clinical reasoning (23). The pain was never assessed using a standardized scale, making questionable the prescription of different grades of analgesics.

Furthermore, the clinical examination was highly different from a GP to another in terms of quality and duration. Overall, it was not comprehensive regarding severity signs (10 GPs or,33% tested the tendon reflex, 3 GPs or 10% tested a cauda equina syndrome). This met the guidelines in the absence of indication of serious spinal pathology or nerve root pain. However, together with the absence of investigation for possible « red flags » during the questioning, this could suggest a deficiency in the screening for severity criteria, even if an intuitive reasoning was used.

The number of drugs prescribed was less than that reported previously (2.3 versus 3.8) (24). Paracetamol alone was rarely prescribed (2GPs or 7%) unlike NSAIDs (27 GPS or 90%), in contrast to what is recommended for good use (5,25), i.e. paracetamol as a first-line treatment and NSAIDs as a second-line therapy. They were not associated with a formal absence of contraindication (no data collected on « pregnancy »). Conversely, the young age of our patient and the absence of comorbidities could explain this prescription. LBP seems to be « a local inflammation dogma » still present in the beliefs. In 2004, paracetamol was prescribed alone in 45% of cases (10). As this study was based on questionnaire sending, the difference could be explained by a desirability bias and confirms the superiority of SP studies regarding this issue.

The screening of some risk factors for chronicity was completely omitted, as well as the assessment of symptoms experienced, and questioning for history of depression and current psychological status. Although interventional studies have failed to prove any clinically relevant effect of simple management strategies focusing on psychosocial factors (26), the guidelines recommend to be aware of them.

Moreover, it was the first consultation and whether a more comprehensive data collection would have been done at subsequent consultations cannot be determined.

Strengths and weaknesses of the study
The study was conducted in primary care practices and in “real-life” conditions. Although the implementation of this approach was cumbersome (scenario design, SP training, costs), it had however the main advantage to access actual practices. It allowed overcoming the desirability bias and observing an entire consultation, including the desirability bias and observing an entire consultation, including counselling and patient education. In fact, this type of approach provides a credible patient simulation. Data collection quality was evidenced by the fact that none of the 30 GPs consulted had recognized the SP and that 27 GPs (90%) had identified a paraspinal muscle contracture (GP comment during the consultation).

However, this study had some limitations. First, it was only conducted in one French urban region (Paris area), although the GP sample corresponded to the national distribution by gender. The extrapolation of our results to rural GP practices is not possible due to different social structures, distances between patient home and technical expertise facilities. Further national studies in other contexts would be useful. A joint study among rheumatologists would be interesting: in the French health-care system, they are also involved in the primary management of aLBP. A similar management has previously been reported (21). The small GP sample size could have bias the result accuracy but we were limited by the self-financing and time-consuming nature of the study (time in obtaining the GP consent, making appointments, commuting time to the various practices and time of consultations). Because of this small sample size only clear trends could be assessed with acceptable accuracy. Furthermore in our study, all these tasks were performed by a
single person (the SP herself). Only one SP and a single consultation are probably not representative of the different managements which could differ depending on the patient. Finally, the assessment of the advice provided to avoid a progression towards chronicity could have been overestimated due to an understanding bias. Medical counselling provided by GPs is probably much better integrated by a SP who is herself a GP. The misunderstanding issue of obscure medical terms was indeed removed in our study.

Perspectives
Further SP studies including more GPs are needed to assess more precisely the observance of the recommendations. The study should be extended to other health professionals involved in the primary management of aLBP in France, including rheumatologists and physiotherapists. Financial constraints have limited this choice due to the absence of reimbursement and the self-funding nature of the study. Obtaining external funding would allow overcoming financial constraints and increasing the number of participants to time-consuming administrative tasks. Further studies involving another SP playing other scenarios and subsequent consultations should be conducted to complete the assessment of data collection and management. Apart from aLBP management, the SP approach seems to be an interesting tool for assessing interventions aimed at improving the implementation of good clinical practice guidelines.

Conclusion
The SP approach enables studying real-world primary care practices. In our study, the aLBP management in primary care was based on a relatively non-exhaustive clinical examination and questioning, although it was difficult to quantify the contribution of the GP intuitive reasoning. Drug prescriptions were not in line with the current good practice guidelines, and NSAIDs were more frequently prescribed than paracetamol. Conversely, the GPs consulted met the recommendations for identifying and avoiding risk factors for chronicity. Obtaining external funding would allow overcoming financial constraints and increasing the number of participants to time-consuming administrative tasks. Further studies involving another SP playing other scenarios and subsequent consultations should be conducted to complete the assessment of data collection and management. Apart from aLBP management, the SP approach seems to be an interesting tool for assessing interventions aimed at improving the implementation of good clinical practice guidelines.

Declarations
Ethical approval: the institutional review board “comité de protection des personnes (CPP) d’Île de France II -registration n°00001072” considered that no approval was needed for the conduct of this study as it was an evaluation of professional practices which did not come within the scope of the French research regulation field.

Source of funding: self-funding by the author.
Conflict of interest: A lorenzo declares a conflict of interest with bristol Myers Squib (Board participation).

Supplementary material
Supplementary material is available at Family Practice online.

References