Eur Spine J (2002) 11 : 267–271
DOI 10.1007/s00586-001-0357-7

ORIGINAL ARTICLE

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Lumbar back and posterior pelvic pain during pregnancy: a 3-year follow-up

Received: 14 April 2001
Revised: 11 August 2001
Accepted: 12 October 2001
Published online: 8 December 2001

This study was conducted with a grant from the Älvsborg Social Insurance Office.

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Abstract This study is a prospective, consecutive, 3-year cohort study of women with back pain in an index pregnancy. The aim was to describe the physical status and disability among women with back pain 3 years after delivery. Pain was identified as lumbar back pain, posterior pelvic pain or combined lumbar as well as posterior pelvic pain. Previous studies have established that all three types of pain can be reduced by structured physiotherapy during pregnancy, and the beneficial effect may last for several years. Though it is known that some women have residual pain for a long time, the relative incidence of the three pain types and their degree of disability associated with each have never been reported. Neither has any study presented findings of a physical examination of women 3 years post partum with a focus on the type of pain. All women who were registered as having experienced back pain during an index pregnancy were interviewed by mail 3 years post partum. Women who had residual back pain filled in an additional questionnaire and were physically examined. Out of 799 pregnant women, 231 had some type of back pain during the index pregnancy, and 41 women had pain 3 years later. Women with combined lumbar and posterior pelvic pain were significantly more disabled ($P<0.05$) and had significantly lower endurance in the lumbar back and hip abduction muscles ($P<0.01$). Some 5% of all pregnant women, or 20% of all women with back pain during pregnancy, had pain 3 years later. The key problem may be poor muscle function in the back and pelvis.

Keywords Low back pain · Pregnancy · Pain type · Muscle endurance

Introduction

Back pain is an abundant problem in normal pregnancy and sick leave for that reason accounts for the majority of all social insurance expenses from work absenteeism during pregnancy in several countries [8, 10, 22]. The type of disability behind that absenteeism has not been identified, with the diagnosis most often used being “back pain” [22]. Earlier publications have reported that 70% of all pregnant women have some kind of back pain [2, 9, 11, 14, 15] and that 20% of all women are on sick leave for that reason for an average of 7 weeks during pregnancy [8, 10, 13, 22].

The incidence of women with some kind of residual back pain 6 years post partum was 20% in one study [18], while serious residual pain has been estimated to affect 7% percent of all pregnant women 18 months post partum [13].

Back pain in pregnancy is not one single pain type, but should be separated into at least lumbar back pain and posterior pelvic pain, and treated accordingly [1, 5, 6, 7, 9, 14, 15, 17]. This would reduce sick leave during pregnancy [10, 15], and may even have a long-term effect [18].

Earlier studies have focused on identifying the problem and on treatment during pregnancy [5, 6, 7, 9, 10, 12, 14], but there are few publications focusing on residual back pain after pregnancy [17, 18]. Earlier studies were based only on questionnaires by mail.

The aim of this investigation was to describe the present physical status and disability among women who experienced some kind of back pain during their index pregnancy 3 years earlier.

To our knowledge, this is the first study of such a population where a physical examination has been performed several years post partum. Furthermore, disability assessment has not been related to type of back pain in any previous study.

Materials and methods

All pregnant women who attended the antenatal clinics at Trandared or Heimdal in Borås, Sweden, over a 2-year period were included in the study, and episodes of spontaneously reported back pain were registered.

Women who had been registered as having experienced back pain during the index pregnancy were contacted by mail 3 years post partum and asked to fill in a questionnaire about regression of pain.

Women who were still living in the area, were not pregnant again, and still suffered residual pain were included in the follow-up study, and were offered two free visits to one of the physiotherapist authors (L.N.). At these visits, a questionnaire seeking history, social, vocational and medical information was filled in. Pain drawings [20], pain scales [19] and disability scales for walking, exercise, housework, shopping, etc. and a physical back examination following a standardized protocol were completed.

The disability scale was used in the same way as a visual analog pain scale, i.e., a self-estimation scaled from 0 to 100, where 0 represented "No difficulties" and 100 represented "very serious difficulties" to describe the present situation. All self-estimation scales had been used in an earlier study [21]. Lumbar back and pelvic pain were defined as in our earlier studies [16] (see Table 1).

We have used the posterior pelvic pain provocation test to help in identifying these women since 1983. The test is performed on the supine patient with her hip flexed 90° on the side to be tested. A light manual pressure is applied on the patient's flexed knee along the longitudinal axis of the femur, while the pelvis is stabilized by the examiner's other hand on the patient's contralateral superior anterior iliac spine. The test is positive when the woman feels a familiar, well-localized pain deep in the gluteal area on the tested side [16].

Specific endurance tests for lumbar back muscles were also performed following the method described by Biering-Sörensen [3, 4]. Hip abduction muscles were tested with the patient in the side position and a 2-kg weight around the ankle. Following the recommendations in earlier studies [7, 9, 14, 15], including the posterior pelvic pain provocation test [16], the women were classified as having lumbar back pain, posterior pelvic pain or a combination of the two, i.e., lumbar pain as well as posterior pelvic pain.

All information was entered into a personal computer and registered in the Statistical Analyzing System, where data processing was done. As a minimum level of statistical significance, $P<0.05$ was chosen. The rank sum test and median values were used because of the small samples and large standard deviations, indicating that normal distribution was not always present.

Table 1 Definition of lumbar back and pelvic pain [16]

Lumbar back pain	Pelvic pain
Present earlier in life	New type of pain, debut during pregnancy
Pain in the lumbar back	Time- and weight-bearing-related pain in the posterior pelvis, deep in one or both gluteal areas
Reduced motion in lumbar back	Normal motion in lumbar back
Pain on palpation of back muscles	Pain on palpation in the gluteal area
Little problem walking or standing	Pain when walking or standing
Constant pain	Pain-free intervals
Negative provocation test for pelvic pain	Positive provocation test for pelvic pain

Results

During the collection period, 799 women attended the two antenatal clinics. A total of 231 women had some type of back pain during pregnancy and became our target population for the follow-up. Seventeen women reported a new pregnancy, and another 11 women had moved out of the area, reducing the group to investigate to 203 women. These women all received a questionnaire. After two reminders, 30 women (15%) had not answered the questionnaire and were registered as early dropouts. Residual back pain at 3 years was reported by 41 women, or 20%, of whom 39 women completed the physical examination and the additional questionnaire. Our results were based on those 39 women. Two women declined participation in the follow-up and were registered as late dropouts (Fig. 1).

We found 13 women with lumbar back pain, 17 women with posterior pelvic pain and 9 women with combined lumbar back as well as posterior pelvic pain.

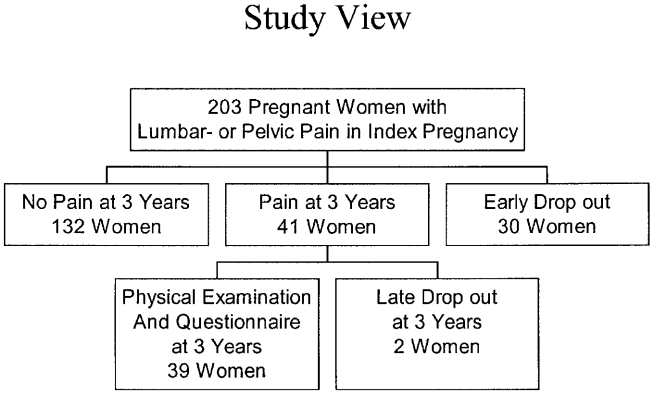

Fig. 1 Study overview

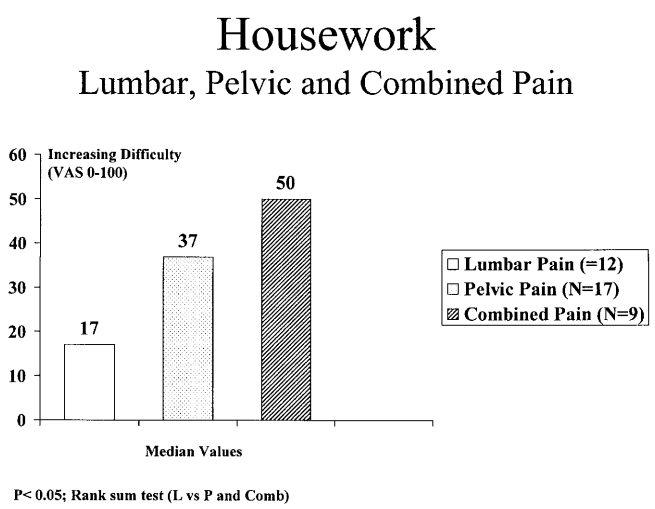

Fig. 2 Housework was less troublesome for women with back pain

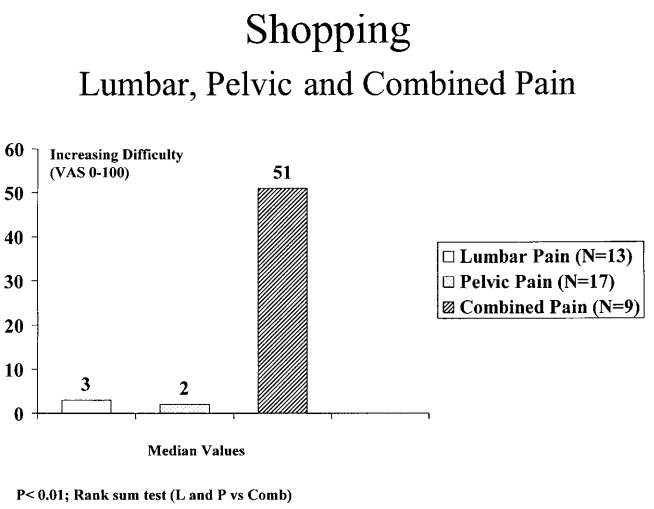

Fig. 4 Shopping was a problem mostly for women with combined pain

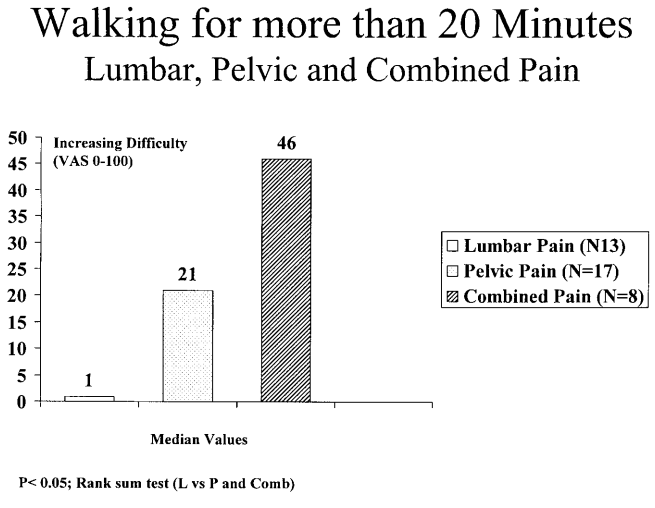

Fig. 3 Lumbar back pain did not interfere with walking

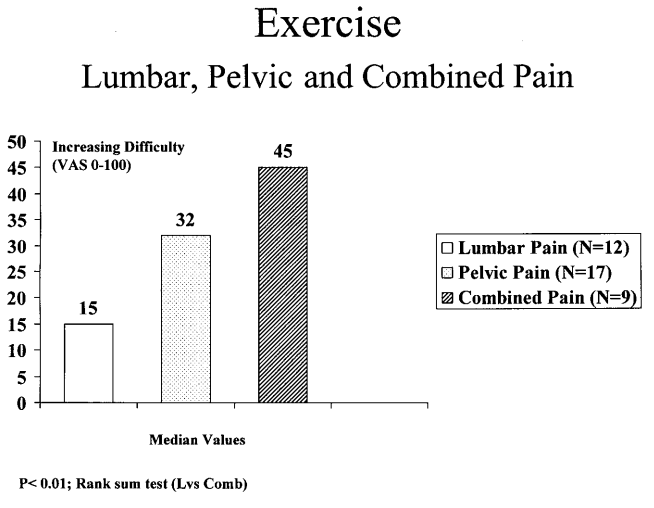

Fig. 5 Exercise was worst for women with combined pain

Comparison of the three pain types revealed some interesting differences in disability (Fig. 2, Fig. 3, Fig. 4). Concerning walking and housework, the women with lumbar back pain were less disabled than the other two groups. Women with combined lumbar back and posterior pelvic pain were significantly more disabled concerning shopping. Concerning exercise, women with combined pain were significantly more disabled than women with lumbar back pain (Fig. 5).

Muscle endurance, measured for the back extensor muscles as well as for the hip abductor muscles, was found to be substantially reduced in the women with combined pain, compared to women with the other two pain types. Whereas endurance for the back extensor muscles was 34 s for women with combined pain, it was 88 s for the other two groups. The expected muscle endurance in the back for normal women in the same age group is 180 s [4]. The situation was similar in the hip abductor muscles (Fig. 6).

Discussion

This study showed that lumbar back pain, posterior pelvic pain or a combination of the two may still disable some women 3 years after pregnancy, and that muscular insufficiency may be an important factor.

An early dropout of 30 women reduced the target population of 203 women. These women did not differ from the rest of the women in factors relevant to back pain during pregnancy according to files from the antenatal clinics, and therefore probably would not have differed 3 years later [13, 17, 18]. A dropout of 15%, no doubt, would in-

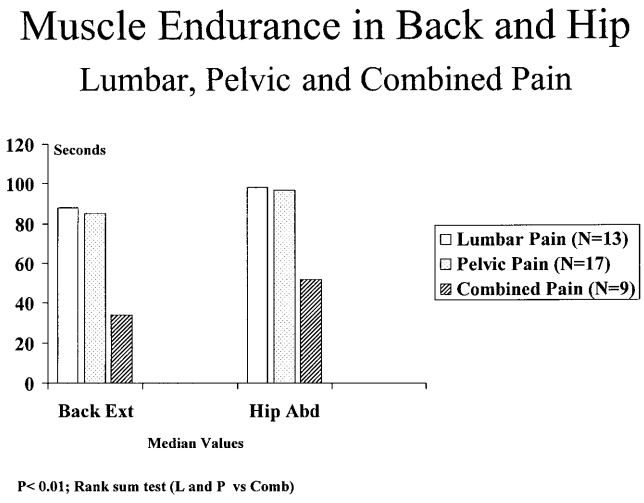

Fig. 6 Muscle endurance was significantly reduced among women with combined pain

fluence our results in a "worst case analysis". However, it is not likely that these women would all be worst cases and have serious residual disabling pain, as our invitation to enter the follow-up study included two free visits to a specially trained physiotherapist where help against this specific pain was offered.

In the reduced study group of 173 women with back pain during the index pregnancy, the incidence of residual pain at 3 years was 23% (41 women), in line with earlier studies in Sweden [16], which is another indication that these 30 drop outs were not an extreme group concerning back pain incidence. The two late dropouts from the physical examination and additional questionnaire both answered the first questionnaire about back pain 3 years after pregnancy and, according to that information, were no different from the rest of the women. These women may or may not have differed in physical examination, but as they represented such a small group, less than 5%, their results could not have any serious impact on the findings presented here.

The new findings in this study were the disability and muscle endurance differences among the three pain types.

It is our clinical experience that pregnant women with increased movement in the pelvic joints have problems with weight bearing on one leg at a time, i.e., walking, climbing stairs etc., and that women with lumbar back pain do not. However, while it was expected that those problems would disappear after delivery, among some women they did not.

It is not likely that so many women would have an increased motion in the pelvic joints 3 years after partus due to persistent hormonal impact on the pelvic ligaments, which is the common explanation for pelvic pain during pregnancy. Therefore, it is not reasonable to believe that the pelvic pain 3 years after pregnancy derived primarily from the pelvic joints.

To find a certain muscle weakness among women with back pain [4] was expected, but it was not anticipated that muscle endurance would be so extensively reduced among women with combined pain. The reduction of endurance to 35 s for the back extensors among the women with combined pain, in comparison to 88 s for the women with pelvic or lumbar pain, was surprising. So much more so, as the women with back or pelvic pain, in turn, had a substantial, but expected, reduction in endurance compared with a normal, age-matched, Swedish female population (>150 s) [3]. The same goes for the reduction in hip abduction endurance.

These findings may indicate that pelvic pain after pregnancy does not come from the joints, but may derive from insufficient muscles in the pelvis, in line with the explanations for the common back muscle insufficiency well known from patients with low back pain in a general population [4]. Pain from strained ligaments and joint capsules because of muscular dysfunction reducing the dynamic stability of the pelvic joints may also be a contributing factor. The abundant differences between low back pain and posterior pelvic pain on the one side and combined pain on the other side may also indicate muscular insufficiency as the main factor. Especially when static activity (standing in line), carrying and endurance are needed, as during shopping, women with extended muscular insufficiency (combined pain) had most problems.

The main problem with this study is of epidemiological origin. Describing a condition that is found only among 5% of the initial population after 3 years is difficult. It takes a very large initial study group to end up with a sufficient residual population. Furthermore, when the residual group to study is divided into three, as in this study, that problem increases. It would have been appropriate to end up with a minimum of some 25–30 women in each group to present results that could be generalized. That would take an initial inclusion group of some 1500–2000 women, which would be possible in a future study.

With the mentioned reservations, and the fact that we have information on our dropouts in this group of 799 pregnant women, we believe that women with persistent pain after pregnancy, and especially those with combined pain, may benefit from a follow-up at the physiotherapist shortly after partus to start a stepwise, individual lumbar back and pelvic muscle training program as soon as the pelvis regains sufficient stability. That might help to avoid developing the serious impairment among women with persisting back pain after pregnancy, especially if the condition is caused by chronic muscular insufficiency, as this study may indicate.

Conclusions

Persisting lumbar back as well as pelvic pain 3 years after pregnancy is probably caused by insufficiency in the large pelvic and dorsal muscles – a condition parallel to muscular insufficiency in the low back, well known from a non-pregnant population, the difference being that the stabilizing muscles of the pelvis are involved among women with pelvic pain.

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