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Lower Extremity Changes Experienced During Pregnancy

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ABSTRACT

The anatomic and physiologic changes occurring with pregnancy result in a variety of symptoms affecting the lower extremity. The purpose of this investigation is to provide a comprehensive look at the lower extremity changes experienced during pregnancy and correlate symptoms with underlying etiology in a literature review. In this retrospective study, 100 postpartum women were interviewed regarding the lower extremity changes experienced in pregnancy. The interview included dermatologic, vascular, neurologic, and musculoskeletal portions. Results demonstrate more than 50% of women reported faster toenail growth, roughened toenail texture, increased dryness of the skin, swelling of the foot, ankle, and leg, unsteady gait, increased foot width, and hip pain. Though a majority of patients did not experience the remaining symptoms represented in the interview, all results are pertinent and deserve understanding to provide better insight and care for the pregnant woman. Therefore, a thorough literature review is presented to correlate the outcomes of the present study with previously published research.

Pregnancy produces considerable anatomic and physiologic stresses on the mother. However, maternal adaptations arise to provide for normal fetal development and allow for parturition. These changes include hormonal surges, biochemical changes, and altered biomechanics that result in an array of symptoms affecting the lower extremity (1). Swelling, pedal aches and pains, and an unsteady gait have been anecdotally identified as the common lower extremity problems experienced during pregnancy. However, the comprehensive impact of pregnancy on the lower extremity has not been explored. Consequently, a regimen of benign neglect is chosen with the hope of symptom resolution postpartum. The purpose of the present study is to identify and research the lower extremity changes experienced during pregnancy. By correlating symptomatology with underlying physiology, the physician has a deeper understanding of the systemic implications of pregnancy on the lower extremity. Therefore, the physician can provide better patient care by selecting a more appropriate treatment plan. The goals of the current study are to quantify symptoms of postpartum mothers, elucidate underlying physiologic processes, and review possible treatment recommendations.

Patients and Methods

One-hundred consecutively and voluntarily enrolled postpartum participants were personally interviewed at SSM DePaul Healthcare Center, Bridgeton, MO, from September 2009 to December 2009. Clearance was gained by the internal review board of the hospital. The study included female participants in the immediate postpartum period (less than 5 days' post parturition). The purpose of the study was verbally explained to the participants. All participants signed a written consent form asserting the goals of the project and their understanding and willingness to participate. Consequently, participants less than 18 years of age were excluded. Participants were notified that all questions pertained to the lower extremity (defined as hips and below) and the current pregnancy unless otherwise specified. The structured interview evaluated lower extremity changes perceived by the postpartum woman during her pregnancy. All data were recorded using a postparturition data collection form (Figure 1) created specifically for the study. Demographic data consisted of age, height, prepregnancy and predelivery weight, race, pertinent past medical history, gravida, para, activity level, and prepregnancy and predelivery shoe size. Moderate activity level was defined as 30 minutes of aerobic activity 3 times a week (2, 3).

The comprehensive interview was broken down into demographic, dermatologic, vascular, neurologic, and musculoskeletal sections. In the dermatologic category, participants were questioned as to presence or absence of ingrown nails, roughened nail texture, dark or light lesions, dry skin, and pruritic areas both during the course of their pregnancy and before their pregnancy. If pruritic lesions were present, the participant was asked to identify the location as the legs, dorsal feet, and/or plantar feet. They also reported on the increase, decrease, or absence of change in nail growth rate during their pregnancy. In the vascular section, participants noted the presence or absence of sweating, varicosities, and swelling during their pregnancy and before pregnancy. If lower extremity swelling was present, the participant was asked to identify the associated location as foot, ankle, and/or leg. Regarding the neurologic portion, patients reported the presence or absence of neurologic sensations and an alteration in balance both during and before pregnancy. If neurologic sensations were reported, the participant was requested to specify the nature of the symptom as burning, tingling, and/or numbness. In the musculoskeletal portion, patients reported

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PREGNANCY INTERVIEW PROTOCOL

DATE:____ **AGE**:____ **HEIGHT**:____ **GRAVIDA**:____ **PARA**:____ **RACE**:____

WEIGHT (prior to pregnancy):____ **PRE-PARTURITION WEIGHT**:____

ACTIVITY LEVEL: HIGH MODERATE(30min 3/wk) LOW

SHOE SIZE (prior to pregnancy):____ **PRESENT SHOE SIZE**:____

PMH:_____

Previous LE problems:_____

Treatment & Results:_____

Effect of previous pregnancy on LE problems:_____

	Prior to Pregnancy	During Pregnancy
DERMATOLOGIC CHANGES		
Ingrown toenails		
Roughened nail texture		
Nail growth rate	N/A	
Skin discoloration		
Dry skin texture		
Pruritic lesions: legs/dorsal feet/plantar feet		
VASCULAR CHANGES		
Excessive sweating		
Varicosities		
Swelling: foot/ankle/leg		
NEUROLOGIC CHANGES		
Tingling, burning, or numbness sensations		
Altered balance in gait/ stance		
MUSCULOSKELETAL CHANGES		
Foot volume	N/A	length____ width____
Arch height	N/A	
Heel, midfoot, or forefoot pain		
Leg pain or cramps		
Hip or knee pain		
Joint motion (with propulsion)	N/A	

COMMENTS:_____

Fig. 1. Postparturition data collection form.

an increase, decrease, or absence of change in first metatarsophalangeal joint range of motion during propulsion, arch height, and pedal length and width during pregnancy. They also noted the presence or absence of leg cramps, foot, knee, and hip pain during and before the pregnancy. If foot pain was present, the participant was asked to stratify the location of the pain to the forefoot, midfoot or arch, and/or heel. Univariate analyses on resultant frequencies and proportions were performed.

Results

A total of 100 postpartum participants were interviewed for the study. No participant refused enrollment, and all participants answered all questions. Some participants described relevant preexisting lower extremity symptoms. One participant reported occurrences of ingrown toenails, 2 participants reported having dry skin, and 1 participant reported the presence of varicosities. No participant conveyed any other lower extremity symptoms before the pregnancy. Each participant with a preexisting symptom reported an exacerbation of the respective symptom during the current pregnancy.

Demographic data of the participants are presented in Tables 1 and 2. The prevalence of symptoms reported during dermatologic, vascular, neurologic, and musculoskeletal portions of the interview is