



# The proportion of women with central sensitivity syndrome in gynecology outpatient clinics (GOPDs)

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## Abstract

**Introduction and hypothesis** Patients in gynecology outpatient clinics (GOPDs) may present with symptoms that do not correlate well with the observed pathology and are usually labelled as having a functional disorder or medically unexplained symptoms (MUS). Underlying central sensitivity syndrome (CSS) with central sensitization (CS) as a potential mechanism may be responsible for some of their symptoms. The aim of this study is to identify the proportion of women with central sensitivity syndrome attending GOPDs.

**Methods** This was a prospective study. All women attending a GOPD included in the study were asked to complete a validated Central Sensitization Inventory (CSI). The responses were graded on a Likert scale from 0 (never) to 4 (always). The total score ranges from 0 to 100. For screening purposes, a single CSI cutoff score of 40 was used to identify the group of women who may have central sensitization syndrome.

**Results** Three hundred twenty-six women participated in the study. Overall, 123 (37%) women achieved a score above 40. This could be interpreted as these patients having increased risk of underlying central sensitization. Of these, 43 had a previously confirmed diagnosis of migraine, 55 (44%) depression, 39 (31.7%) anxiety, 11 fibromyalgia (FM), 34 irritable bowel syndrome (IBS) and 16 chronic fatigue syndrome (CFS/ME).

**Conclusions** Managing patients and their expectations in gynecological outpatient departments when symptoms are inconsistent with observable pathological findings is challenging. This is further complicated when patients have a concomitant central sensitivity syndrome, which can also influence the surgical outcome. Identifying these patients is a key factor for appropriate management.

**Keywords** Central sensitivity syndrome · Central sensitization · Pelvic organ prolapse · Gynecology outpatient clinic

## Introduction

Patients presenting in gynecological outpatient departments frequently have symptoms that are not consistent with observable biomedical pathology. Some will have persistent pain presentations that are disproportionate to the pelvic pathological changes noted and, on more thorough evaluation, will also have other more generalized symptomology such as fatigue, poor sleep patterns and perceptual sensitivities. This requires clinical vigilance

particularly when patients are keen to have definitive symptom relief despite modest clinical findings. Patients will often be distressed during the consultation, highlighting impaired function that they feel needs to be addressed by more aggressive management.

While it is common in primary care to manage patients having no clear diagnosis, there has been little evaluation of the prevalence of this problem in secondary care. Historic evidence [1] suggests that over 50% of those attending secondary care clinics also do not have a clear diagnosis, resulting in suboptimal explanation of their presentation and so potentially ineffective management. Patients will find themselves being referred to more specialist gynecological centers, particularly if there have been previous unsuccessful attempts at surgical resolution. There has been little elucidation of the magnitude of this problem within the gynecological arena.

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**Table 1** Evidence of central sensitivity syndrome in women with pelvic organ prolapse and other gynecological conditions

Total no. 326	Pelvic organ prolapse <i>n</i> = 86	Other gynecological conditions <i>n</i> = 240	Fischer's test
With CSS <i>n</i> = 123	27 (32%)	96 (40%)	<i>P</i> = 0.25
Without CSS <i>n</i> = 203	59 (68%)	144 (60%)	

The patients described may or may not have a pre-existing diagnosis of a functional disorder. These include more widespread disorders such as fibromyalgia, chronic fatigue syndrome (CFS) and myalgia encephalitis (ME), medically unexplained symptoms (MUS), central sensitivity syndromes and more regionally based diagnoses such as irritable bowel syndrome and interstitial cystitis. These are overlapping diagnoses, which are inconsistently used, and there is continued debate about the etiology and conceptualization of these various functional disorders. One diagnostic label that appears to be acceptable to both clinicians and patients is central sensitivity syndrome (CSS) [2].

The aforementioned syndromes collectively appear to involve at least some degree of central dysregulation resulting in hypersensitivity to both noxious and non-noxious triggers. This persistent heightened reactivity results in an exaggerated pain response (hyperalgesia) as well as enhanced responses to normal sensations such as touch and pressure. The term central sensitivity syndrome thus again appears helpful in defining the presentation.

Recent research studies have shown that surgical intervention is less effective in those with a central sensitivity syndrome and potentially may exacerbate the problem in some [17]. Thus, accurate assessment and awareness of this problem may help avoid unnecessary invasive intervention and facilitate more appropriate customized conservative management.

There is currently little evidence clarifying the prevalence of a central sensitivity syndrome among women presenting to a gynecological outpatient department. This study was therefore designed to estimate the proportion of women who might have symptoms suggesting the presence of a central sensitivity syndrome attending gynecology outpatient clinics with general gynecological disorders and in women with pelvic organ prolapse.

## Methods

This was a prospective study conducted at a tertiary teaching hospital and was approved by the West of Scotland Research Ethics Committee. The study was conducted from March 2014 to June 2014. All women attending gynecology outpatient clinics and older than 18 years were included in the study. Women who were not able or willing to consent were excluded. The patient information leaflet was sent to all women before the clinic appointment. All were asked to complete a validated Central Sensitization Inventory (CSI) while they were in the gynecology clinic awaiting their appointment. The CSI was originally designed to capture patient's multiple somatic and emotional symptoms related to central sensitization [3]. Part A of the CSI assesses 25 symptoms common to CSS with a Likert scale from 0 (never) to 4 (always). The total score ranges from 0 to 100, and higher scores indicate a greater degree of symptomology related to CSSs. Part B of the CSI asks if subjects have previously been diagnosed with one or more specific CSS diagnoses. The CSI is presented in Appendices 1 and 2. For screening purposes, a single CSI cutoff score of 40 was used to identify the group of women who may have central sensitization syndrome [4]. Proportions and confidence intervals were calculated using SPSS version 17. Fisher's exact test was used to calculate *P* values. The CSI scores for pelvic organ prolapse (POP) patients were then compared to those with other general gynecological diagnoses (such as menorrhagia, pelvic pain, ovarian cyst, requesting sterilization, overactive bladder symptoms, intermenstrual bleeding, postmenopausal bleeding, cervical polyp, endometriosis). The comparison of CSI scores was performed between the POP group and those with other general gynecological conditions to understand whether the dragging sensation (one of the symptoms of prolapse) was attributed to the presence or absence of CSS and to identify the proportion of CSS seen

**Table 2** Mean central sensitization scores and \*standard deviation between women with pelvic organ prolapse and other general gynecological conditions (Table 2)

Conditions	Mean CS score	Mean diff, CI, <i>t</i> test*
Pelvic organ prolapse	33.9 (*SD 15.2)	−3.2, CI−7.1 to 6, * <i>P</i> = 0.098
Other gynecological conditions	37.2 (*SD 15.8)	
Women with pain	55.4 (*23–91)	

**Table 3** Mean central sensitization scores and \*standard deviation in women with evidence of CSS

Conditions	Mean CS score
Pelvic organ prolapse	51.81 (*SD 9.11)
Other gynecological conditions	52.7 (*SD 10.43).

in the POP group to be able to compare the outcomes of surgical treatment of prolapse.

The two-sample Kolmogorov-Smirnov test/two-tailed test was used to compare the distribution of CSI scores in women with evidence of CSS and pelvic organ prolapse and in women with evidence of CSS and other gynecological conditions using XLSTAT.

## Results

About 480 women attended gynecological clinics during this period. Three hundred twenty-six women participated in the study. Overall, 123 (37%) women achieved a score > 40. This could be interpreted as being at increased risk of underlying central sensitization. Of these, 43 had a previously confirmed diagnosis of migraine, 55 (44%) depression, 39 (31.7%) anxiety, 11 FM, 34 IBS and 16 CFS/ME. These conditions were picked up with the help of the CSI and were found to be in combinations of 2–3 in women with CSI scores between 40 and 60). Women (25%) with high CSI scores (60–91) were found to have a combination of 4–5 conditions. This suggests that higher scores may reflect the presence of more conditions coming under the umbrella of CSS and hence causing more symptoms in patients.

Of 326 women, the main complaint of 86 who attended the outpatient clinic was pelvic organ prolapse, while 240 attended with other gynecological concerns. The evidence of central sensitivity syndrome was established in 27 women (32%) with pelvic organ prolapse and 96 women (40%) with other gynecological conditions (Table 1). The other general gynecological conditions mentioned were menorrhagia, pelvic pain, ovarian cyst, requesting sterilization, overactive bladder symptoms, intermenstrual bleeding, postmenopausal

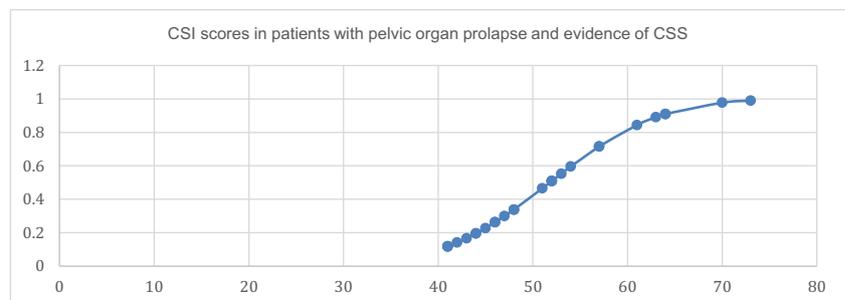
bleeding, cervical polyp, endometriosis, fibroid, lichen sclerosus, women planned to undergo Fentons procedure and women referred for management of menopausal symptoms. The CS score range for general gynecological conditions excluding pelvic pain was 18–54. The CS score range for pelvic or vaginal pain was 32–91. There were two known cases of endometriosis, and the scores were 59 and 60.

Mean CS scores for the pelvic organ prolapse group and other gynecological conditions were 33.9 (SD 15.2) and 37.2 (SD 15.8), respectively. There was no statistical difference in overall mean central sensitization scores between women with pelvic organ prolapse and other general gynecological conditions (Table 2). However, women presenting with pelvic or vaginal pain were found to have higher central sensitization scores (Table 2).

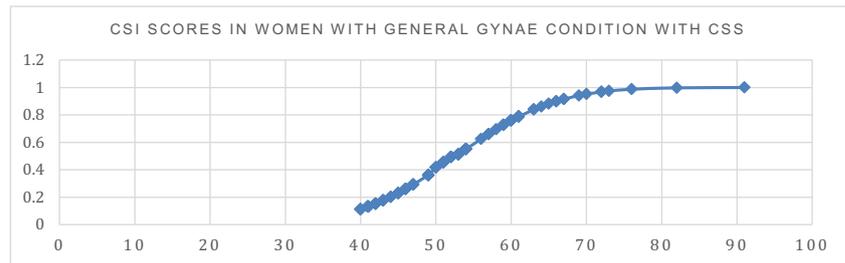
The mean CSI score in women with POP with established evidence of CSS was 51.81 (SD 9.11) and mean CSI score in other gynecological conditions with evidence of CSS was 52.7 (SD 10.43). (Table 3). The distribution of CSI scores in patients with evidence of CSS in both groups is shown in Graph 1 and 2, respectively. The two-sample Kolmogorov-Smirnov test and two-tailed test used to compare the distribution demonstrate that both groups follow very similar distributions ( $P = 0.999$ ).

## Discussion

Clinicians will often assess patients who experience somatic symptomatology that does not fit easily within the existing biomedical diagnostic criteria. Some of these patients will have the clinical label of a functional disorder, with the bodily symptoms not demonstrably due to a specific underlying disease process [5]. Research indicates that the widespread symptomatology may be due to a dysfunction in central and possibly peripheral processing [6]. Central sensitization is a plausible theoretical explanation for the persistence of such symptoms. Previously, the term medically unexplained symptoms (MUS) was used but was often considered unhelpful to both patients and clinicians. This could result in fractious consultations and disengagement by the

**Graph 1** Distribution of CSI scores in women with POP and CSS

**Graph 2** Distribution of CSI scores in women with other gynecological conditions and CSS



patient with perceptions that the clinician thought that “the symptoms were all in their head” [7].

A potentially more acceptable umbrella term that is being increasingly adopted is central sensitivity syndrome (CSS). CSS includes conditions such as fibromyalgia, IBS, temporomandibular joint disease (TMJ), chronic fatigue syndrome, tension headaches/migraines, restless leg syndrome, multiple chemical sensitivities, interstitial cystitis, myofascial pain syndrome, post-traumatic stress disorder (PTSD) and neck injuries such as whiplash [8]. The patients suffering from this syndrome have high symptom complaints due at least in part to underlying central sensitization [9, 10]. The development of this syndrome can also result in considerable psychosocial impairment, work disability, and increased utilization of health care resources [11–13].

The clinical challenge is to recognize, diagnose and manage this syndrome since it can be detrimental to the patient-doctor relationship as well as put patients at risk of iatrogenic harm from unnecessary diagnostic and surgical interventions [14–16]. Patients can potentially lose trust in the medical system as they perceive medical disbelief in their presentations while clinicians will unwittingly develop negative attitudes toward them. Historically, these patients have often been labeled “heart-sink” patients. It is therefore imperative to identify patients with evidence of central sensitivity syndrome during the clinical decision-making and ensuring appropriate interventions. This study explores the extent of this presentation within the gynecological arena.

Our study demonstrated that around 37% of patients attending our general gynecological outpatient clinics (32% with POP and 40% with other gynecological disorders) could be considered to have a central sensitivity syndrome when using a validated CSS instrument. The CSI scores in both groups followed very similar distributions. The study indicated that women with pelvic pain and vaginal pain had higher scores on the CSI. This supports the potential pathophysiological role of central sensitization in chronic pelvic pain, irritable bowel and bladder disorder where the symptom complex is out of keeping with the clinical presentation, as suggested by other authors [4].

The patients with CSS are greatly bothered by their symptoms and may well need the input of the

multidisciplinary team involving a pain team, physiotherapist and psychologist (if needed) rather than unnecessary diagnostic or surgical interventions.

The strength of this study is that to our knowledge this is the first study to identify the number of women with evidence of central sensitivity syndrome presenting with pelvic organ prolapse and general gynecological conditions. This is also an attempt to identify possible hidden factors that could be responsible for the poor outcomes of surgical interventions in terms of improvement of patient’s symptoms as reported by Gwilym and his team [17].

The weakness of this study is that no objective test was utilized to identify CSS, and so an independent measure cannot currently be used. The presence of a central sensitivity syndrome is based on a questionnaire; however, the questionnaire had been validated and tested for its reliability in diagnosing CSS [3, 18, 19].

There are very few studies in the literature assessing the role of central sensitization in the outcomes of treatment. Following this study, a prospective study was designed and rolled out to assess the outcome of pelvic organ prolapse surgery in women with evidence of CSS. We are still waiting to analyze the data from that study.

## Conclusion

Managing patients and their expectations in gynecological outpatient departments when symptoms are inconsistent with observable pathological findings is challenging. This is further complicated when patients have a concomitant central sensitivity syndrome, which can also influence the surgical outcome. Further research is required to elucidate the way this syndrome is best understood and managed in the gynecological arena and whether this will have an impact on the treatment outcome.

## Compliance with ethical standards

**Conflicts of interest** Monika Vij: none.

Dr. Anthony Davies: none.

Anu Dua: Honoraria, Speciality European Pharma.

Robert Freeman: Honoraria, holds a position on the IUGA Board

## Appendix 1 Central Sensitization Inventory

Please circle the best response to the right of each statement

1	I feel unrefreshed when I wake up in the morning	Never	Rarely	Sometimes	Often	Always
2	My muscles feel stiff and achy	Never	Rarely	Sometimes	Often	Always
3	I have anxiety attacks	Never	Rarely	Sometimes	Often	Always
4	I grind or clench my teeth	Never	Rarely	Sometimes	Often	Always
5	I have problems with diarrhea and/or constipation	Never	Rarely	Sometimes	Often	Always
6	I need help in performing my daily activities	Never	Rarely	Sometimes	Often	Always
7	I am sensitive to bright lights	Never	Rarely	Sometimes	Often	Always
8	I get tired very easily when I am physically active	Never	Rarely	Sometimes	Often	Always
9	I feel pain all over my body	Never	Rarely	Sometimes	Often	Always
10	I have headaches	Never	Rarely	Sometimes	Often	Always
11	I feel discomfort in my bladder and/or burning when I urinate	Never	Rarely	Sometimes	Often	Always
12	I do not sleep well	Never	Rarely	Sometimes	Often	Always
13	I have difficulty concentrating	Never	Rarely	Sometimes	Often	Always
14	I have skin problems such as dryness, itchiness or rashes	Never	Rarely	Sometimes	Often	Always
15	Stress makes my physical symptoms get worse	Never	Rarely	Sometimes	Often	Always
16	I feel sad or depressed	Never	Rarely	Sometimes	Often	Always
17	I have low energy	Never	Rarely	Sometimes	Often	Always
18	I have muscle tension in my neck and shoulders	Never	Rarely	Sometimes	Often	Always
19	I have pain in my jaw	Never	Rarely	Sometimes	Often	Always
20	Certain smells, such as perfumes, make me feel dizzy and nauseated	Never	Rarely	Sometimes	Often	Always
21	I have to urinate frequently	Never	Rarely	Sometimes	Often	Always
22	My legs feel uncomfortable and restless when I am trying to go to sleep at night	Never	Rarely	Sometimes	Often	Always
23	I have difficulty remembering things	Never	Rarely	Sometimes	Often	Always
24	I suffered trauma as a child	Never	Rarely	Sometimes	Often	Always
25	I have pain in my pelvic area	Never	Rarely	Sometimes	Often	Always
						<b>Total=</b>

## Appendix 2 Central Sensitization Inventory: Part B

Have you been diagnosed by a doctor with any of the following disorders?

Please check the box to the right for each diagnosis and write the year of the diagnosis

		No	Yes	Year diagnosed
1	Restless leg syndrome			
2	Chronic fatigue syndrome			
3	Fibromyalgia			
4	Temporomandibular joint disorder (TMJ)			
5	Migraine or tension headaches			
6	Irritable bowel syndrome			
7	Multiple chemical sensitivities			
8	Neck injury (including whiplash)			
9	Anxiety or panic attacks			
10	Depression			

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