Andropause Syndrome in Men Treated for Metastatic Prostate Cancer
A Qualitative Study of the Impact of Symptoms

**KEY WORDS**
Andropause
Androgen deprivation therapy
Framework analysis
Hot flashes
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**Background:** Androgen deprivation therapy (ADT) has become the cornerstone of treatment for men with metastatic prostate cancer. However, treatments are associated with a number of adverse effects that collectively are referred to as andropause syndrome, or the male menopause. **Objective:** This study explored the experience and impact of andropause symptoms, particularly hot flashes, among men undergoing ADT for metastatic prostate cancer. **Methods:** Twenty-one men receiving ADT for metastatic prostate cancer underwent a qualitative interview focusing on the adverse effects of ADT and the impact of these symptoms on daily living and coping strategies. **Results:** The most frequently mentioned adverse effects were hot flashes and night sweats, gynecomastia, cognitive decline, and changes in sexual function. Hot flashes did impact on everyday functioning, and night sweats regularly disturbed sleep patterns and led to participants feeling tired and irritable. Participants reported a lack of control over their hot flashes and night sweats. There was reluctance among our sample to disclose the type of symptoms experienced to others. **Conclusion:** The occurrence of andropause symptoms, including hot flashes and night sweats, was common among this sample. Participants reported a range of cognitive and behavioral responses to these symptoms. There was some reluctance about discussing a prostate cancer diagnosis or the occurrence of symptoms with others. **Implications for Practice:** The findings have implications for a range of individual and couple interventions to manage the impact of this constellation of symptoms.

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Prostate cancer is the most common cancer among men in the United Kingdom, with more than 36,000 new cases per year.1 The incidence rate has increased 3-fold in the last 30 years, mainly due to improvements in detection of the disease.2 Outcomes are good with a 5-year survival rate of 77% in the United Kingdom.2 Androgen deprivation therapy (ADT) has become the cornerstone of treatment for men with metastatic prostate cancer. In addition, its use has widened to include men who have experienced disease progression following initial radical treatment with a curative intent. In the adjuvant setting, ADT has been shown to improve survival following surgery for lymph node–positive disease or with radiotherapy for locally advanced disease.3,4 Androgen deprivation therapy works on the basis that prostate cancer development initially requires the presence of functioning testes or the availability of adrenal-derived or exogenous androgens,3 and the removal of androgens will therefore restrict tumor growth. In advanced or metastatic prostate cancer, symptom reduction and a marked clinical response have been found following the use of ADT.5 There are several methods available to achieve androgen deprivation, which include bilateral orchidectomy (surgical removal of the testicles), luteinizing hormone–releasing hormone, agonists/antagonists, and estrogen therapy. However, treatments are associated with a number of adverse effects.6 Adverse effects vary according to the type of treatment but include erectile dysfunction, decreased libido, infertility, loss in bone mineral density, gynecomastia, depressed mood, and hot flashes.8–11 Collectively, these symptoms in healthy men are referred to as andropause syndrome or the male menopause. Unlike menopause in women, the term refers to a collection of symptoms and not to change in reproductive capacity or cessation of menstruation. In healthy men, the symptoms may occur as a consequence of a steady, age-related decrease in the production of testosterone and dehydroepiandrosterone. In men receiving ADT, these symptoms may be quicker in onset and more severe than seen in the normal aging male population.8

Hot flashes are a symptom generally associated with women going through the menopause. Up to 80% of men treated for prostate cancer experience hot flashes,12,13 although it is estimated that only a third of these patients seek help.14 Along with impotence, hot flashes are the most commonly reported adverse effect in men treated with ADTs.15 The causal mechanism of hot flashes in men remains poorly understood16; however, androgens may stimulate the hypothalamus to inhibit release of catecholamines, which influence thermoregulation.17 The literature on hot flashes in men is limited; however, the nature of the symptom is similar to that reported by menopausal women and breast cancer patients17,18; namely, they are transitory lasting between 2 and 10 minutes; they start quickly and without warning generally on the neck and chest spreading up to the face and forehead and/or down the torso.19

Although similar in nature to menopausal hot flashes, it has been reported that those experienced by men receiving ADT for prostate cancer are more frequent, more severe, and longer lasting than those experienced by the general menopausal population.20 Some believe that hot flashes are “self-limiting”,21 however, more than 40% of prostate patients may experience hot flashes 8 years after treatment.19 Some men report being “greatly distressed” by hot flashes, and there is evidence that they impact negatively on quality of life.15 Previous studies have neglected to examine the impact of these symptoms or the cognitive and behavioral responses used to reduce the impact of the symptoms. Qualitative methods are used to explore subjective experiences and allow an insight into individuals’ interpretations and beliefs. A qualitative interview approach was chosen for this study as it allowed exploration of participants’ experience, understanding, and responses to andropause symptoms. The aim of this study was to explore, through in-depth interviews, the experience and impact of andropause symptoms (particularly hot flashes) among men being treated with ADT for metastatic prostate cancer.

Methods

Participants

The inclusion criteria for the study were (1) metastatic prostate cancer patients who were receiving ADT for a minimum of 3 months; (2) proficient in spoken English, to participate in an interview; and (3) cognitively and physically able to participate in an interview. Patients were identified from a clinic database at a large London teaching hospital. Forty-eight patients were identified as appropriate for inclusion in the study and were sent an information pack and consent form. Twenty-two patients did not respond to the invitation to take part, an additional 2 patients could not be contacted, 2 withdrew when contacted to arrange an interview, and 1 participant was too ill to take part.

Interview Schedule and Data Analysis Strategy

A semistructured interview schedule was developed through review of previous research findings and discussion with health psychologists, a urology clinical nurse specialist, and a consultant urologist. The interview was piloted with 2 patients to check for appropriateness and clarity. The interview schedule provided a loose structure consisting of open-ended questions that defined the areas to be explored but was flexible so as to allow the discussion of issues as they emerged during the interview. The interview schedule focused on the adverse effects of prostate cancer and its treatment, impact of these on daily living (ie, “What have been the main effects of these symptoms/adverse effects on your daily life?”) and cognitive and behavioral coping strategies (ie, “What have you done to cope with these symptoms/adverse effects?”). Interviews were conducted either over the telephone or in a private room at the hospital, depending on patient preference, and lasted on average 37 minutes (range, 27–48 minutes). Interviews were conducted separately from routine care by a researcher independent of the patient’s care. There were no differences in the length of the interviews, or the depth of the responses, for telephone interviews compared with face-to-face interviews.

All interviews were recorded and transcribed verbatim, to ensure the transcript was then checked against the original
recording. To maintain anonymity, each participant was assigned a pseudonym. The interviews were analyzed using a qualitative methodology based on the framework approach. Following completion of all interviews, each transcript was analyzed by noting relevant units of meaning and creating free codes. Free codes were then grouped into coherent themes. Once themes had been identified for each participant, these were integrated across participants to generate a list of superordinate themes that captured the participants’ shared experiences. The next level of analysis involved the examination of relationships and interactions between the themes. Reliability of the analysis was ensured through systematic review of the data by 2 authors. Only minor differences in researcher perspective emerged, and these were resolved by mutual agreement. There is no consensus regarding the definition or appropriateness of validity checks within qualitative research or the methods by which such checks should be performed. However, in the context of the current study, validity was taken to refer to some form of qualifying check, or measure, of the research. Using this conceptualization of validity, several checks were undertaken. First, the verbatim transcriptions were checked against the original recordings. Second, positive and negative cases were sought during the analysis process to ensure that a range of experiences was reflected in the presentation of findings. Finally, primary data were included in the presentation of findings to enable reviewers to reach conclusions about the appropriateness and thus validity of the study findings.

Results

Twenty-one patients completed the interview. Participant characteristics are outlined in the Table. The average age of participants was 78 years (range, 68–92 years), and 12 (57%) were married. All participants were receiving goserelin (Zoladex) or a combination of Zoladex and diethylstilbestrol (Stilboestrol) (n = 2). To present the shared experience of participants, themes were compared across cases for similarity and richness. This process identified 4 main adverse effects of hormone treatment and a further issue related to the disclosure of symptoms. The most frequently mentioned adverse effects were hot flashes and night sweats, gynecomastia, cognitive decline, and changes in sexual function. Less frequently mentioned were weight gain, urgency to urinate, and mood changes.

| Table • Sociodemographic Characteristics of the Sample (N = 21) |
|-------------------------|--------|
| Age mean, y (range, 68–92) | 78 (range, 68–92) |
| Civil status |
| Married/with partner | 12 (57%) |
| Separated, divorced, or widowed | 7 (33%) |
| Single | 2 (10%) |
| Education |
| Elementary | 4 (19%) |
| Secondary | 9 (43%) |
| College/university | 8 (38%) |
| Race/ethnicity |
| White | 14 (67%) |
| Black | 5 (23%) |
| Asian/Chinese | 2 (10%) |

Hot Flashes and Night Sweats

Fifteen of the 21 patients reported experiencing hot flashes or night sweats. All participants defined these in somatic terms using descriptions such as feeling warm or hot, reddening of the face, profuse sweating, wetness, and uncomfortableness. For most, this was experienced predominantly on their face and upper body, including hair, back of neck, and shoulders. The experience of hot flashes was generally brief, lasting for only a few minutes, although the after-effects, such as wetness and redness, were longer lasting and sometimes required a behavioral response, such as removal of clothing, toweling oneself to remove wetness, showering, fanning, altering the temperature of the room (by turning down the heating or opening windows), and using less bedding at night. For some men, these behavioral responses had an impact on their relationships or social activities such as avoiding some social situations and concerns about others’ interpretations and responses to their behavior. Such behavioral responses were often accompanied by a sense of embarrassment.

My mates, they say “So what’s up with you?” ‘cause when I go out with them to the pub, I keep going to the toilet, and I only have to go in there to wash, you know wipe down ‘cause I’m sweating. (Paul, aged 68 years)

For most participants, the hot flash was followed by a feeling of reduced body temperature, which was described as “chilly,” “cold,” or “shivering.” This was often perceived to be the result of the individual’s behavioral response, such as opening a window or removing clothing.

They get hot, hot, then I’m sweating, but immediately when they stop, they’re cold. You get a shiver, and then it wears off and you go back to normal. (Arthur, aged 78 years)

Participants varied in terms of their awareness of hot flashes as an adverse effect of their treatment. Some were not aware that hot flashes were the result of the treatment and expressed confusion and some anxiety about the symptom that they were experiencing:

The only thing that reassured me was when I got the letter from you. I was relieved to be honest; it makes more sense. (David, aged 77 years)

Others had externalized the cause of their hot flashes, for example, believing it to be a normal response to the ambient temperature, excessive heating in a room, or overexercise. For some, this led to frequent checking of the room’s temperature or of their central heating system, and this was often how they came to realize that they were experiencing hot flashes:

I would find that I would keep checking the thermostat to see if it was the room getting warm or it’s just me, and I found out it was me. (Peter, aged 92 years)
A further issue disclosed throughout the interviews was the disruption to sleep from night sweats, which participants found tiring and which they associated with subsequent daytime fatigue. The experience of night sweats was associated with emotional responses including annoyance, irritation, and embarrassment.

Tiredness is the most annoying thing. Yes, it does restrict what I do; it makes me annoyed and slowed down.

I’m tired and bad tempered. (David, aged 77 years)

It was common for the men who experience night sweats to report being awoken from their sleep and to then perform behavioral responses such as removing bed covers, washing, toweling down, and changing wet pillows. In addition, some participants stated that, if they were awakened at night by the night sweats, they would experience a sense of urgency to urinate, which would require them to get up.

I sometimes go the whole night, but if I wake up having a flush, I almost immediately have to go and pee as well, I can guarantee you that. (John, aged 71 years)

Breast Enlargement and Sensitivity

Around one-half of the participants reported gynecomastia (breast enlargement) or breast tenderness and, in some cases, pain, ranging from mild, such as “sensitive” and “uncomfortable,” to “quite severe pain.” It was common for the participants to report embarrassment as a result of breast enlargement, with one participant being unwilling to refer to breast tissue and instead using the term: “an enlargement of the muscles in my chest.” For some, the embarrassment was limited to situations where they were required to expose their chest, such as swimming or sunbathing.

It is a bit embarrassing if you’re lying on the beach and your bosom is slightly bigger than the girl that’s lying beside you. (Donald, aged 73 years)

Most participants reported responding to the symptom with humor, particularly with friends and family members. For the majority, breast enlargement was an adverse effect that they were willing to accept as part of the treatment. One man also reported a belief that he would have developed enlarged breasts anyway, as part of the normal aging process. However, the participants did also report behavioral responses to hide their breast enlargement, including wearing loose clothing, wearing tight clothing (eg, all-in-one swimwear), and avoidance of situations where they were required to expose their chest.

Decline in Cognitive Function

Some participants reported a decline in their cognitive functioning. Such changes in function included difficulty filling in forms (such as tax returns), problems with short-term memory, and failing to complete task games (such as a crossword). Those who reported experiencing cognitive decline expressed emotions such as frustration, concern, and reduced confidence. However, most were accepting of the symptom and felt that it was not too debilitating to everyday functioning. Most participants reported an initial belief that the cognitive decline was age related, which was often the result of peers experiencing similar memory difficulties.

When you suddenly can’t remember something you think, “Oh my God,” but then the wife is the same. So I think it just happens when you get older. (Frank, aged 76 years)

One man expressed relief that the cognitive decline was an adverse effect of treatment and not the result of a degenerative condition, such as Alzheimer’s disease. This was the one adverse effect where few compensatory strategies were reported. Only 1 participant reported that his partner helped by providing answers that he could not remember.

Reduced Sexual Function and the Effect on Relationships

Participants often reported impotence and reduced libido. Some referred to diminishing sexual activity as part of the normal aging process, and it was therefore something that they had accepted. Acceptance was more commonly expressed if participants were single or if their partner had a low libido.

My sex-life days are behind me. I really haven’t noticed, you know. It’s not anything I worry about. (Thomas, aged 77 years)

Others, however, reported loss of sexual function to be an area of major concern. Some spoke of having a desire to have sex but of lacking the “physical capabilities.” Others discussed the impact that impotence had on their relationships, particularly their concerns about “disappointment” and “unhappiness” they perceived it to cause their wives. Some expressed concern they would “forget” how to have sex, referring to the penis as having a “memory muscle,” and also expressed a belief that they would need to start practicing sex as early as possible. Participants reported discussing impotence with their oncologist or nurse and of trying medical and mechanical approaches to gaining an erection. Although the methods themselves worked, the planning required and the inconvenience of using such aids were problematic. In some cases, although an erection was achieved, it was painful and acted as a disincentive to attempt sexual activity too regularly.

That the erection is rather painful is somewhat of a disincentive to trying it too often. Also the couple of hours after it are rather inconvenient because one’s marching around with an erection. (Patrick, aged 77 years)

Finally, 1 participant spoke of the impact of decreased sexual function on his perception of his masculinity, referring to expected masculine behavior and the emotional impact of not being able to perform as expected.

When you feel you’re there and ready and if you could behave like a male, when you know you can’t behave totally like a male, you do get a niggling feeling in the back of your mind. (Mervyn, aged 72 years)
Disclosure of Symptoms

There was variability with regard to whether participants chose to tell others of their symptoms, although the contacts that would be informed tended to be limited to family and close friends. Disclosure to a circle of friends or to work colleagues was limited to a need or a right to know. The right to know was perceived to occur when someone alluded to experiencing symptoms that could be indicative of prostate cancer. Some participants spoke of how, when placed in this position, they felt obligated to disclose their own situation to facilitate help seeking.

Well gentlemen of my age. I talked to 1 or 2 that come up to you at the bar and say, “Oh so what happened then?” And the consequence is that they go and see the doctor themselves. I’ve encouraged others, and I’ve even landed one in hospital. (Bill, aged 82 years)

Reasons for nondisclosure of hot flashes tended to relate to embarrassment associated with symptoms such as impotence and hot flashes. When disclosure did take place among friends, it often appeared to be on a superficial level and was often treated with humor.

I’ve told them about the hot flashes. We just laugh it off really. (Samuel, aged 79 years)

Discussion

The aim of this study was to explore the experience and impact of andropause symptoms, particularly hot flashes, among men undergoing ADT for metastatic prostate cancer. All participants in this study experienced 1 or more andropause symptom as a result of their treatment. The cause of these symptoms was generally understood, allowing participants to feel that what they were experiencing was normal for their condition. However, hot flashes did affect everyday functioning, and night sweats regularly disturbed sleep patterns and led to participants feeling tired and irritable. Participants reported a lack of control over their hot flashes or night sweats. The incidence rate observed in this study is similar to that reported previously, and the reports of the experience of the symptom and its impact are similar to those found in the literature for breast cancer patients.

A range of treatments is available to alleviate hot flashes in prostate cancer patients. Although reductions in reported hot flashes have been observed among men treated with the synthetic progesterone, megestrol acetate, the use of this drug may increase prostate-specific antigen levels and may not be an acceptable treatment choice to patients. Antidepressant agents, such as venlafaxine and selective serotonin reuptake inhibitors, have also been shown to be efficacious in reducing hot flashes. However, these drugs are associated with unpleasant adverse effects (dry mouth, nausea, constipation) and again may be unacceptable to patients. More recently, psychological interventions, such as cognitive behavioral therapy, have been shown to be effective in reducing the frequency and impact of hot flashes and night sweats among breast cancer patients.

This type of intervention is based on a model that outlines the physiological, cognitive, affective, and behavioral factors influencing the experience of hot flashes and night sweats. Given the similarity in symptom experience and impact of hot flashes among breast and prostate cancer patients, it may be that this type of intervention would also be suitable for prostate cancer patients.

Many participants remarked that they still had a desire to undertake sexual activity; however, few were actively receiving therapy for erectile dysfunction. Some felt that there was no need for treatment as they were older and single, whereas others reported a belief that the negative aspects (planning and discomfort) outweighed the benefits. There was a common belief expressed that reduced libido and impotence were inevitable consequences of aging and therefore for some participants were seen as an acceptable adverse effect. This finding is in line with the results of a previous qualitative study that reported that prostate cancer survivors expressed an association between aging and sexual dysfunction. Furthermore, sexual dysfunction is often viewed as an acceptable consequence of being treated for a life-threatening condition such as prostate cancer. However, among some of the married men in our study, there was an expression of conflict within the relationship that had resulted from changing sexual relations. This conflict may have resulted from a sense of loss shared within the couple, and there is evidence to suggest that the partner’s quality of life is adversely affected following prostate cancer treatment. For these couples, an intervention aimed at improving sexual and psychosocial adjustment for both partners may be required.

Gynecomastia and increased breast sensitivity were reported by half of the participants, which is similar to other studies. Although gynecomastia was seen as an acceptable consequence of prostate cancer treatment, participants expressed some degree of embarrassment about the symptom and reported behavioral responses such as wearing loose clothing and avoidance of revealing situations. Embarrassment was related to beliefs about masculinity, including making comparative references to women. Beliefs about one’s own masculinity following prostate cancer have been explored and reported previously. What research in this area suggests is that beliefs about one’s masculinity are influenced by one’s previous roles and by relevant, available role models. Findings also suggest that there is variability in terms of the impact of prostate cancer symptoms on perceptions of masculinity, with some participants reporting profound negative effects, whereas others demonstrate a re-formulation of their perception of masculinity. Posttreatment interventions can be hampered by a lack of disclosure among men and in many cases a stoic acceptance of one’s situation. In many cases, there was reluctance among our sample to disclose to others the type of symptoms experienced. This lack of disclosure may be due to embarrassment of having to report “female” experiences. Others suggest that men avoid disclosure of prostate cancer to avoid burdening others and to avoid stigmatization.

The findings of this study have implications for practice. There was a lack of awareness among patients about some of the common symptoms that can result from androgen deprivation.

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treatment for advanced prostate cancer. Patients may benefit from a clear discussion about the range of possible adverse effects and of the possible management options that exist. However, there were also more general concerns around the disclosure of a prostate cancer diagnosis and treatment effects. The current research and other research in this field suggest that, given the right environment, men are willing to disclose the physical and emotional experiences of prostate cancer and its treatments. Such patients could benefit from an intervention to aid disclosure in situations where this is desired and to reduce the emotional conflict that can often arise when disclosure concerns exist. Finally, there were cases of the symptoms impacting negatively on relationships. Therefore, the introduction of couple-based interventions to ease the difficulties associated with sexual difficulties in this group could contribute to better psychosocial outcomes for couples.

In conclusion, the findings of this study demonstrate that the occurrence of andropause symptoms, including hot flashes and night sweats, was common among the participants. Participants reported a range of cognitive and behavioral responses to cope with these symptoms. However, some participants demonstrated a lack of awareness about the causes of the symptoms they experienced. There was some reluctance about discussing a prostate cancer diagnosis or the occurrence of symptoms with others. It is therefore important for professionals to ask about adverse effects in men undergoing ADT and to assist men in actively discussing their sexuality and sexual concerns. This may be of particular importance, given that available mechanical and chemical treatments for impotence do not appeal to all prostate cancer patients, and therefore there may be unmet physical and psychological needs among this group.

References
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