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Review Article

Social Anxiety Leading to Osteoporosis

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ABSTRACT

An anxiety disorder that is frequently seen is social anxiety disorder. Speaking in front of a group, dating, interacting with a cashier at a store, taking part in a job interview, meeting new people, etc. are examples of circumstances where persons with social anxiety disorder experience symptoms of worry or panic. Women with significant levels of pre-existing health anxiety scored more anxious about osteoporosis and anticipated chance of acquiring osteoporosis. When bone mass, bone mineral density, or the composition and strength of bone alter, osteoporosis, a disease of the bones, results. This could lead to a decrease in bone density and a higher risk of fractures (broken bones).

Keywords: Anxiety, Osteoporosis, Social anxiety

INTRODUCTION

Stress

One example of psychological pain is stress. Since they can improve motivation, physical performance, and environmental responsiveness, minor amounts of stress may be beneficial. Yet excessive stress can also worsen a pre-existing ailment and increase the risk of heart attacks, ulcers, strokes, and mental problems like depression.

In addition to being external and related to the environment, psychological stress can also result from internal views that make a person feel pressured, uncomfortable, or other negative emotions as a consequence

of a situation that they later interpret as stressful.

An emotional event that results in predictable biochemical, physiological, and behavioural changes is referred to as **Psychological stress**. Psychological stress can be acute, as in the case of a fight-or-flight reaction to a traumatic or life-threatening occurrence, or it can be persistent, as in the case of carers, service members, and those who work in high-stress jobs. Stress hormones, such as glucocorticoids (cortisol) and catecholamines, are released through the hypothalamic-pituitary-adrenal (HPA) axis and sympathomimetic (SAM) pathway in response to acute psychological and physical stress (epinephrine, norepinephrine). Leukocytes, which are immunological cells, have receptors for these hormones (glucocorticoid and adrenergic, respectively), and they react quickly to their stimulation by changing the inflammatory immune response[1].

Stress, whether it's acute or ongoing, can lead to anxiety or depressive illnesses. The chronic emotional and physical symptoms of depressive mood disorders, such as major depressive disorder (MDD), include a gloomy mood, a loss of interest and enjoyment (anhedonia), and irregular sleep patterns. Anxiety and depression frequently co-occur, and both illnesses can affect the HPA response. Excessive worry, fear, impatience, difficulty concentrating, and physical symptoms like racing heart and shortness of breath can all be signs of anxiety. Many potentially harmful biochemical and physiological alterations are brought on by mental health problems like depression. These symptoms are known as post-traumatic stress disorder (PTSD) when they last longer than the acute period of one month (PTSD)[2].

Social anxiety

An anxiety disorder that is frequently seen is social anxiety disorder. Speaking in front of a group, dating, interacting with a cashier

at a store, taking part in a job interview, meeting new people, etc. are examples of circumstances where persons with social anxiety disorder experience symptoms of worry or panic. A person may have anxiety or fear when performing routine tasks like eating or drinking in front of people or using the restroom in a public place because they worry about being humiliated, judged, or rejected[3].

Some sufferers of social anxiety disorder only experience panic in one or two specific situations, such as speaking in front of others or striking up a discussion. Extreme fear and anxiety can strike some people in any social situation. Anybody who has social anxiety disorder may do so in a variety of ways. Nonetheless, the following are some typical scenarios that people frequently struggle with:

Talking to strangers

- Speaking in public
- Dating
- Making eye contact
- Entering rooms
- Using public restrooms
- Going to parties
- Eating in front of other people
- Going to school or work
- Starting conversations

Everyone with social anxiety fears particular circumstances for a variety of reasons. But in general, it's an overwhelming fear of:

- Being judged or watched by others in social situations
- Being embarrassed or humiliated -- and showing it by blushing, sweating, or shaking
- Accidentally offending someone
- Being the centre of attention

What is the treatment for social anxiety disorder?

Psychotherapy, commonly referred to as "talk therapy," and/or medication are frequently used in the treatment of social anxiety disorder[3].

Medication

- Selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors are antidepressants (SNRIs)
- Beta-blockers
- Drugs that reduce anxiety, like benzodiazepines

Behavioral treatment

Working with a qualified therapist to recognize and modify your nervous thoughts about social situations is called behavioral therapy.

For social anxiety disorder, exposure therapy, a type of behavioral therapy, is widely employed. In order for exposure therapy to be effective, uncomfortable social situations are introduced to you gradually while you wait until you become comfortable. Your brain is training itself that a social scenario you were terrified of is actually not that horrible during this process.

Most therapists who use exposure therapy start with minor exposures to distressing circumstances before progressing to more challenging exposures once you feel comfortable. The benefit of this therapy is that it addresses the root cause of social anxiety disorder rather than merely its symptoms. So, the likelihood of your symptoms returning is lower if you quit behavioral therapy[4].

Additional treatments

For the treatment of social anxiety disorder, other therapies have also been tested. They consist of:

With this therapeutic method, you learn relaxation techniques including breathing exercises and meditation. Although some specific social phobias may benefit from relaxation therapy, it is not thought to be an

effective treatment for general anxiety disorder.

Osteoporosis

When bone mass, bone mineral density, or the composition and strength of bone alter, osteoporosis, a disease of the bones, results. This could lead to a decrease in bone density and a higher risk of fractures (broken bones)[5].

Because it typically goes undiagnosed until a bone is shattered, and sometimes even then, osteoporosis is referred described as a "silent" illness. The primary cause of fractures in postmenopausal women and elderly men is osteoporosis. Any bone can break, however the most common broken bones are the hip, spine, and wrist vertebrae.

Causes

Osteoporosis occurs when there is an excessive loss of bone mass and the structure of bone tissue is disturbed. Certain risk factors either increase your risk of developing osteoporosis or can actually cause it.

There are many risk factors for osteoporosis, but not everyone with the illness has them. Certain risk factors may be modifiable, while others may not be. You might be able to avoid sickness and fractures, though, by being aware of these factors.

The following elements may have an impact on your risk of osteoporosis:

Sex. Your risk of osteoporosis is increased if you are a woman. Women's bones are smaller and have lower peak bone mass than men's do. But, men are still at risk, especially after the age of 70[6].

Age. As you get older, bone loss happens more quickly and bone development is slower. The risk of osteoporosis can rise as your bones deteriorate over time.

Body weight. Thin, slim women and men are more susceptible to osteoporosis due to

the fact that they have less bone to lose than individuals with stronger bones.

Family background. According to research, if one of your parents has experienced an osteoporosis or a hip fracture, you may be more susceptible to fractures and osteoporosis[7].

Adjustments to hormones The risk of developing osteoporosis may rise if you have low levels of specific hormones. For instance:

- After menopause, low oestrogen levels in women.
- Low levels of oestrogen from premenopausal women's abnormal lack of menstruation brought on by hormone abnormalities or excessive physical exercise.
- Low testosterone levels in males. Osteoporosis is a danger for individuals with conditions that lower testosterone. However the progressive decline of testosterone with age is probably not the main factor in bone loss.

Diet. The risk of osteoporosis and fractures can rise from childhood into old age if you eat a diet low in calcium and vitamin D. The risk of bone loss and osteoporosis may rise if you overeat or consume insufficient amounts of protein.

Other health problems. Certain medical illnesses, such as various endocrine and hormonal disorders, gastrointestinal disorders, rheumatoid arthritis, specific types of cancer, HIV/AIDS, and anorexia nervosa, that you might be able to cure or control can raise the risk of osteoporosis[8].

Social anxiety and Osteoporosis

Greater levels of anxiety in postmenopausal women may raise their risk of fracture, and they should also be taken into account when determining their risk of osteoporosis.

Women with higher anxiety levels have significantly lower BMD than women with lower anxiety levels. Women who

experience anxiety have greater cortisol levels and more inflammatory biomarkers, which may activate bone turnover and cause bone loss, resulting in osteoporosis and fractures. Prior to menopause, anxious women who are restless or fidgety may have reduced weight and bone mass, putting them at a higher risk of fracture due to the subsequent loss of hormones.

Mechanism of action

- In postmenopausal women, BMD evaluated by the industry-recognized DXA in the lumbar spine and femoral neck was substantially correlated with anxiety levels as determined by HAMA. Previous studies have linked decreased BMD and quantitative bone ultrasonography readings to sensations of anxiety.
- Anxiety symptoms accompanied by elevated levels of proinflammatory cytokines and c-reactive protein. The high frequency of osteoporosis and fractures in women with chronic inflammatory rheumatic disorders suggests that inflammation causes bone loss and contributes to osteoporosis by activating bone turnover. TNF-a, interleukin (IL)-1, IL-6, and IL-17 are examples of proinflammatory cytokines that induce the expression of receptor activators of the NF-kB ligand (RANKL), increasing osteoclast development and activation and contributing to generalised osteopenia and osteoporosis while impairing osteoblast differentiation and function proliferation.
- Due to the stimulation of the hypothalamic-pituitary-adrenocortical (HPA) axis, anxiety causes high plasma cortisol levels, and cortisol has been reported to contribute to bone loss by

increasing bone resorption and decreasing bone formation.

- Several psychiatric disorders, such as depression and anxiety disorders, involve oxidative stress as a pathophysiological mechanism. oxidative stress' role in the emergence of postmenopausal osteoporosis. the existence of redox balance abnormalities, exhibiting elevated homocysteine and nitric oxide levels, decreased activity of glutathione peroxidase and superoxide dismutase, and low folate and total antioxidant power in plasma/serum in women with postmenopausal osteoporosis.

Water-soluble phospholipid lysophosphatidic acid has drawn a lot of attention because it is a powerful signalling molecule that interacts with G-protein-coupled receptors to trigger a variety of cellular responses, including survival, proliferation, and cytoskeletal alterations. Beyond poor bone growth and lower bone mass, the lysophosphatidic acid receptors in mutant mice showed anxiety-like reactions.

CONCLUSIONS

The review of our study showed a significantly higher risk of osteoporosis development among people who are more anxious. Social anxiety is one of the major issues nowadays and it is seen mostly in women. It can be minimized in various ways. Postmenopausal women have a higher risk of osteoporosis if they are anxious.

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