Health and Stress (week 4)

The Role of Stress in Cancer II

Dr. Beriwan A. Ali

PhD. Manchester University, England, UK.
MSc. Salahaddin University, Erbil, Iraq.
BSc. Salahaddin University, Erbil, Iraq.

Lecturer
Medical Microbiologist
Erbil Medical Institute
Erbil Polytechnic University

Lecturer
TISHK Int. University

GBD Collaborator
Institute of Health Metrics and Evaluation
University of Washington
Seattle, Washington
USA

Outlines and Objectives

Outlines:

- The relationship between stress and cancer
- Research data
- The effects of stress on existing cancer
- How to reduce stress?
- Psychosocial variables
- Biological pathway between stress and cancer
- Psychological influences on progression of disease

Objectives:

- Determine the relation between stress and cancer.
- Evaluate the mechanisms of stress reduction.
- Compare the impact of Psychosocial variables on the existing diseases.
- Characterize the biological pathways between stress and cancer.

Research Data!

- The relationship between stress and cancer is the source of many ongoing studies.
- One 2013 **review Trusted Source** of 12 studies **assessed work stress** and **how it relates to cancer risk**.
- They found that work stress wasn't associated with overall cancer risk.
- work stress wasn't linked with the development of specific cancers, such as those of the prostate, lung, and breast.
- However, a more recent 2017 **studyTrusted Source** investigated **the past levels and duration of job stress experienced** by more 2,000 men newly diagnosed with prostate cancer.
- **It found that perceived workplace stress was associated with a higher risk of prostate cancer.**

Research data!

- A large 2016 study Trusted Source of 106,000 women in the United Kingdom looked at **whether frequent stress or negative life events affected their risk of breast cancer.** In the end, **the study didn't find consistent evidence to suggest that frequent stress factors into someone's breast cancer risk.**
- **Overall, there still isn't enough conclusive evidence to definitely say whether stress causes cancer or even increases someone's risk.**

The effects of stress on existing cancer

- While it's unclear whether stress causes cancer, there is some evidence that stress can have an effect on existing cancer by speeding up tumor growth and **metastasis.** (Metastasis occurs when cancer spreads from its initial location).
- **2016** in a mouse model of **pancreatic cancer** **exposed mice to chronic stress**.
- **The investigators found that after five weeks, the stressed mice had larger tumors and a reduced survival rate.** Their immune systems were also significantly weakened.
- **2019** examined human breast tumor cells implanted in mice.
- Researchers found **an increase in the activity of receptors for stress hormones in sites were metastasis occurred.** This suggests that the activation of these receptors by stress hormones could play a role in metastasis.

How to reduce stress?

- **Stress Affects Your Overall Health.**
- **Protect your physical and emotional well-being with the followings:**
- Set priorities and boundaries. Determine what needs to be done now and what can wait a little bit.
- Learn to turn down new tasks that may overextend or overwhelm you.
- Take time to cultivate your relationships with loved ones.
- keep your heart healthy with regular exercise.
- Try out relaxation techniques: yoga, deep breathing, or meditation.
- Make sleep a priority, aim 7-8 hrs. per night.

Psychosocial variables may be related to cancer in a variety of ways

- (a) **Influences on exposure status**, such as smoking, alcohol consumption, sexual hygiene, and occupational carcinogens.
- (b) **Medical care behaviors**, including participation in screening, delay in recognition of symptoms and in acting upon the presence of symptoms, and compliance to medical regimen.

The presumptive biological pathway between stress and cancer:

- involves **various parameters of immunological functioning**, which can promote initiation of cancers as well as their progression.
- However, linkages between stress or distress and immunosuppression are likely to be complex.
- The immune system is a complicated network and a variety of factors in the host participate in this process.
- **e.g Coping style of emotional suppression** is related to lower levels of natural killer cell activity, which in tum leads to a more rapid progression of the disease .

Psychological influences on progression of disease

- The specific importance of the **father-son relationship**, showed that the prospective association (the outcome) survived statistical controls for smoking, drinking, and radiation exposure.
- **Dependency and depression** may be predictors of later cancer.
- Depression is often a predictor of case fatality in other illnesses.
- **Greater emotional distance** was also found to be related to **suicide.**
- Case fatality studies have linked survival **to greater emotional expressiveness.**

Reference:

Gaillard, H., et. al., 2015, Replication **stress and cancer, Nat. Rev. Cancer,** 15(5):276-89.