Aerobic 3-month physical activity program in breast cancer survivors: effects on sleep behavior, anthropometric indices of adiposity and fasting glucose metabolism.

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Background: Evidences exist that sleep disorders are associated with an increased risk of cancer, including breast cancer (BC) (Verkasalo et al., 2005). Also adiposity and hypersinsulinemia have been acknowledged as factors involved in cancer mortality including BC (Pisani, 2008). Physical activity (PA) has the potential to counterbalance all of these risk factors. In fact, PA has been shown to produces beneficial effects on sleep quality and BC prognosis, as well as on adiposity and glucose metabolism (Mann et al., 2014). We thus designed a randomized controlled trial to test the effect of an aerobic PA program on sleep behavior, anthropometric indices of adiposity and fasting glucose metabolism in BC women included in a dietary intervention trial for prevention of BC recurrences.

Subjects and Methods: 42 BC women, aged 35-70 years, were randomized into an intervention (IG=19) and control group (CG=23). The IG had to participate in a 3-month active PA program that included two sessions of one-hour brisk walking per week. At baseline and after 3-month, all women were requested to undergo an anthropometric visit, to collect a blood sample for detemination of fasting insulin and glucose levels, to wear the Actigraph Actiwatch for one week for sleep parameters evaluation (Actual Sleep Time *(AST)*, Actual Wake Time *(AWT)*, Sleep Efficiency *(SE)*; Sleep Latency *(SL)*; Mean Activity Score *(MAS)*; Movement and Fragmentation Index *(MFI)* and Immobility time *(IT)*).

Results: At the end of the 3-month PA program, CG showed an overall worsening of sleep behaviour. In fact, **SE**, **IT** and **AST** decreased ($p<0.01$), while **AWT**, **MAS** and **MFI** increased ($p<0.01$). In contrast, IG did not show any sign of sleep deterioration. As for the indices of adiposity, a significant reduction in waist circumference ($p<0.05$) and % fat mass ($p<0.01$) was observed in IG, but not in CG. Although fasting glucose and insulin levels did not show any significant change in either group, it was nevertheless encouraging that the two groups displayed an opposite trend as far as the changes in fasting insulin were concerned: fasting insulin showed a mean reduction (-0.9 μU//ml) in the IG group and a mean increment in the CG (+0.7 μU/ml).

Conclusion: Our results suggest that a standardized PA program in BC survivors prevents sleep deterioration, reduces anthropometric indices of adiposity and may prove useful in preventing the development of hyperinsulinemic levels.

REFERENCES

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