Study of the impact of adapted physical activity sessions on cognitive functions and quality of life of patients treated for localized breast cancer

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Introduction

- The improvement in therapeutic care for people with cancer, combined with the development of oncological supportive care, allows patients to live longer and in better conditions.
- Among the side effects reported, a certain number of studies have highlighted the deleterious impact of cancer treatments on cognition and more particularly with chemotherapy, whether objectively (measured by cognitive tests). or subjective (felt by patients).
- If for the majority of patients the cognitive disorders are mild and transient some may present a more severe and sometimes prolonged impact (from a few months to several years).
- The literature data as a whole show greater benefits with non-pharmacological techniques compared to medicinal interventions, the latter sometimes being accompanied by significant adverse effects.
- This study will be one of the first carried out on this topic in Europe. It will make it possible to assess whether the practice of adapted physical activity sessions is an effective means of managing and alleviating the cognitive complaints expressed by patients following treatment for non-metastatic breast cancer.

Methods

- **Research methodology:** longitudinal, multicenter, randomized study (immediate Adapted Physical Activity (APA) sessions vs. APA sessions delayed by 3 months T1)

- **Main objective:** To evaluate in patients treated for non-metastatic breast cancer and having benefited from adjuvant or neoadjuvant chemotherapy, the benefit of adapted physical activity sessions on the perceived improvement in their cognitive functions measured by a favorable evolution of **the perceived deficiency score of the validated FACT-COG self-questionnaire**, after the end of their treatment with surgery and chemotherapy.

- **Secondary objectives: T**he impact of physical activity on quality of life parameters. **T**he impact of treatment on objective cognitive performance. **T**he relationships between cognitive function disorders and quality of life parameters. **T**he relationships between objective disorders (measured by neuropsychological tests) and the feelings of patients. **M**aintaining physical activity at a distance.

Assessment T0 → T2

- **A cognitive assessment:** MMS, HVLT, verbal spans, TMT A & B, visuospatial spans, Stroop, letter-number sequence, D2, verbal fluencies, symbols.
- An assessment of the **cognitive complaint**: FACT-COG questionnaire.
- An assessment of **fatigue**: FACIT-F questionnaire.
- A **mood assessment**: HADS questionnaire.
- A specific assessment of the **quality of life** of patients treated for breast cancer: FACT-B.

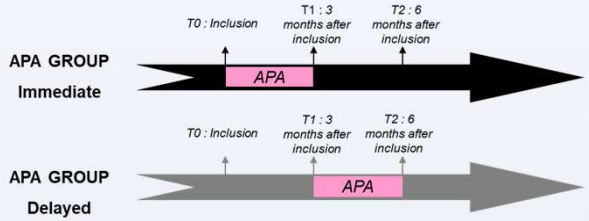

Figure 1. Description of the study

APA

- Patients will benefit from an APA program of **10 sessions over 5 weeks** (2 weekly sessions), led by a sports management professional with training in Sport and Cancer (specificities of physical activity in the aftermath of cancer breast).
- These **one-hour sessions** will be standardized, particularly in terms of level of energy expenditure.

Inclusion criteria : woman, aged 18 and over, with operated localized non-inflammatory breast cancer, subjective cognitive complaints following treatment assessed by four fact-cog items (impact on quality of life). Score less than or equal to 8/16 (for patients aged 30 to 49 and 70 to 89 years) and ≤ 9/16 (from 50 to 69 years), corresponding to percentile 10, no clinical evidence of metastasis at the time of inclusion, patient having received adjuvant treatment with chemotherapy, patient benefiting from a social protection scheme, French language, patient with a minimum level of education 3 "end of primary studies" (scale of barbizet), absence of neurological history with after-effects (e.g. neurological after-effects of cranial trauma, stroke, MS, epilepsy, neuro-degenerative pathology), absence of personality disorders and progressive psychiatric pathology.

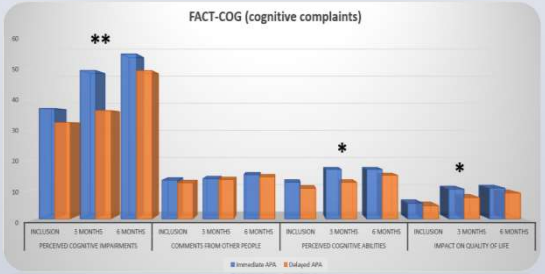

Figure 2 : FACT-COG Results

- Regarding maintaining physical activity at a distance (3 months and 6 months), we observed that **81.25%** of patients in the immediate APA group practiced regular activity 3 months after inclusion vs. **58.82%** for the delayed APA group. At 6 months, we observed that **75%** of the immediate APA group practiced regular activity and **80%** for the delayed APA group.

Results

- At the end of the inclusions, **32 patients** are evaluable (n = 15 in the immediate APA group and 17 in the delayed APA group). The average age is 48.65 years for the delayed APA group and 51.35 years for the immediate APA group, there is no significant difference (p=0.69).
- Concerning the neuropsychological evaluation of patients in the two groups, **we note a significant difference in the level of visuospatial spans at 3 months.** The Immediate APA group presented better performance than the Delayed APA group during this test **(p=0.02)**.
- Concerning the quality of life data evaluated, the FACT-COG reveals a significant **improvement in perceived cognitive impairment** at the 3-month evaluation in favor of the Immediate APA group compared to the Delayed APA group **(p=0.003)**. The same is true for **Perceived Cognitive Abilities (p=0.0169)** and Impact on quality of life **(p=0.0214)**. (Figure 2).
- Concerning the FACT-B results, we observed a significant difference on **the functional well-being item** at the 3-month evaluation in favor of the Immediate APA group compared to the Delayed APA group **(p=0.02). FACIT-F questionnaire** : We note a significant difference at 3 months in favor of the Immediate APA group compared to the delayed APA group **(p=0.02).**

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Discussion

- Despite recruitment difficulties (i.e. difficult involvement of healthcare teams, inclusion of patients away from chemotherapy/radiotherapy while the evolution of recommendations is in favor of practicing APA from the initial treatment, period COVID…) and the low final number, the results highlight that post-treatment APA could have a positive impact on the cognitive functions of patients regarding certain items related to memory.
- The same is true for the improvement of cognitive complaints and quality of life, whether in terms of physical and functional well-being and fatigue.
- Participation in APA post-treatment also shows a maintenance of this activity over time whether for the immediate APA or delayed APA group.
- It would also be interesting to be able to evaluate the longer-term effects (beyond 6 months) of APA on patients' cognitive complaints, cognitive functioning and their quality of life.

References

- Vardy, J. and I. Tannock, *Cognitive function after chemotherapy in adults with solid tumours.* Crit Rev Oncol Hematol, 2007. **63**(3): p. 183-202.
- Galvao, D. and R. Newton, Review of exercise intervention studies in cancer patients. J Clin Oncol, 2005. 23(4): p. 899-909.
- Wefel, J.S., J. Vardy, T. Ahles, and S.B. Schagen, *International Cognition and Cancer Task Force recommendations to harmonise studies of cognitive function in patients with cancer.* Lancet Oncol, 2011. **12**(7): p. 703-8.