

A review on tumor treating fields, a novel modality in cancer treatment

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Discussion and Conclusions: This novel bibliography research procedure, combining STRING search for protein-protein interaction with a regular search on scientific literature databases, allow to acquire a comprehensive vision of all inflammatory related genes that have been associated to PTB and PD till this very moment.

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A review on tumor treating fields, a novel modality in cancer treatment

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ABSTRACT

Introduction: Glioblastoma Multiforme (GBM) is one of the deadliest tumours that appears in the brain and it is characterised by its aggressiveness and by a very short overall survival (OS) [1]. Despite all the efforts that have been put into trying to improve treatment outcomes, GBM patients' prognosis is still very poor. In the last couple of years, a new technique was developed to target tumoral cells. Tumour Treating Fields (TTFields) are intermediate-frequency (100–300 kHz) alternating electric fields (1–3 V/cm at the tumour bed) that can affect cells mitosis during metaphase and cytokinesis. Results from clinical trials [2,3] showed that this technique can lead to an increased OS both in newly diagnosed and recurrent patients. Our aim is to address the main findings regarding this therapy and discuss future challenges based on a literature review of the papers published since this technique was first reported in 2004 to the present date.

Materials and methods: This literature review was performed considering only publications made in journals with impact factor in the areas of interest (biomedical engineering and oncology). Appropriate keywords (TTFields, alternating electric field therapy, glioblastoma) were used to filter the results and select the relevant publications in Pubmed and Web of Science until May 2019. The total number of papers analysed was 29.

Results: Results from clinical trials showed that a minimum daily usage of 18 h can improve the OS, while other studies showed that switching the direction of the applied field between two perpendicular orientations alternately increases the number of cells that are affected by this technique. Up until now, only skin dermatitis was reported as a side-effect due to the usage of a hydrogel between the scalp and the electrodes. Computational studies allowed to predict the electric field in the brain during therapy and subsequent studies proved that the uncertainty regarding biological tissues parameters (e.g.: electrical conductivity) might have a significant impact on these predictions. Furthermore, the best electrodes positioning on the scalp and the impact of removing a part of the skull to enhance the electric field magnitude in the tumour are some important topics that are being discussed.

Discussion and conclusions: Despite the quick developments since it was first reported, TTFields investigation is still at its beginning. Some current research includes the thermal impact of this therapy and the study of its applicability in other types of cancer such as non-small cell lung cancer (NSCLC) and pancreatic and ovarian cancers. Nonetheless, this technique proved to be a very useful therapy in the treatment of GBM and all the results obtained so far point out to TTFields being an excellent fourth modality to fight cancer.

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Automedication in utentes of the municipality of Almada

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ABSTRACT

Introduction: With the evolution of accessibility to medication in the 1970s and 1980s, self-medication (SM) was generalised, becoming an integral part of health self-care – an independent act of prevention, diagnosis and treatment of the diseases of self without professional counselling [1,2]. In a more global concept, SM may be considered as the act by which the individual, on his own initiative or through the influence of others, decides to use a drug for relief or treatment of self-reported grievances [3]. This concept essentially encompasses two forms: responsible SM where the individual should be informed about the non-prescription medicines (MNSRM) through the leaflets and health technicians, so that they use it efficiently and safely. Non-responsible SM is one in which there is no information about MNSRM and where self-diagnosis occurs [4]. The objectives of the study are: verify the percentage of SM and characterise it in the adult users of the municipality of Almada, verify if there is a relation between the practice of SM with the sociodemographic variables – age, sex and literacy.

Materials and methods: Type of study: descriptive-correlational. The sample was non-probabilistic, accidental. 321 inhabitants of the municipality of Almada were inquired, aged over 16 years, when leaving pharmacies between May and June 2018. A 90% confidence interval and 1.88 standard deviations were used. The information was collected through a survey with 14 questions asked directly to subjects, which was validated with 20 pre-tests. All respondents gave their consent when answering to the survey.

Results: Percentage of SM: 50.16%; Mean of participants was 55 years old and standard deviation of 17.2. 113 cases for the feminine gender, 48 cases for male gender; 35 cases for age (57–66) as the most representative class; Spearman corr. where: between gender and SM, $r_s = 0.101$, $p < .01$, positive and significant; between SM and literacy $r_s = -0.350$, $p < .001$, negative and significant; between SM and age $r_s = 0.422$, $p < .001$, positive and significant.

Discussion and conclusions: It is verified that the percentage of self-medication is about half of the respondents, being superior in the female sex and more represented by the age group of 57–66 years. There is direct and significant relation between SM and gender and SM and age. On the other hand there is an inverse and significant relation between SM and literacy.

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