In this issue

Light and heat: a deadly mix for cancer cells

Photodynamic therapy or PDT is a technique that is used to produce localised tissue necrosis. PDT is dependent on the generation of hyper-reactive cytotoxic oxygen species. In PDT, due to insufficient oxygen levels, efficient cell death is not seen in tumours that are poorly vascularised. Recently a variant of PDT, photothermal therapy (PTT) that is independent of oxygen, has been described as a novel anti-tumour strategy. In this issue of EJC, Camerin and colleagues have obtained the first images illustrating the mechanism of PTT action at the cellular level. The nature of the damage seen rejects the possibility of repair processes or selection of resistant cell clones. In addition, the authors also provide preliminary studies showing good tumour response following PTT in mice bearing subcutaneously transplanted amelanotic melanomas. The present findings clearly highlight that PTT is a very efficient process at both the cellular and animal level and can be usefully applied for the treatment of cutaneous tumours.

Vitamin D, its receptor and breast cancer

The active form of vitamin D, 1,25-dihydroxy vitamin D (1,25(OH)D), has an established role in calcium homeostasis and many anticancer properties including induction of differentiation/apoptosis and inhibition of cell proliferation. 1,25(OH)D elicits its biological functions by binding to an intracellular vitamin D receptor (VDR) that trigger changes in levels of target gene transcription. The circulating concentration of 1,25(OH)D and certain single nucleotide polymorphisms in the *VDR* gene have been recognised to contribute to the risk of breast cancer. In a new study from Lowe and colleagues, the combined effect of these two variables on developing breast cancer has been assessed from 179 patients with matched controls in the UK Caucasian population. The study revealed that women with low circulating levels of vitamin D and certain *Bsm*I single nucleotide polymorphic alleles of *VDR* gene were significantly associated with nearly seven times greater risk of developing breast cancer than their counterparts in the UK.

Old drugs, new combination: improving urothelial cancer treatments

The pathogenesis of urothelial carcinoma often involves mutated *ras* genes and is mainly treated by chemotherapy. The combination of methotrexate, vinblastine, doxorubicin and cisplatin was a major treatment breakthrough in the 1980s and reported 70% overall response rate. Unfortunately most patients relapsed with overall prognosis remaining very poor. New regimens of single-agent gemcitabine and in combination with cisplatin, lowered chemotherapy toxicity but failed to improve the overall response rate and survival. In this issue of EJC, a multicentre EORTC study has assessed the activity of gemcitabine and a tricyclic farnesyl transferase inhibitor SCH66336 as treatment combination for advanced urothelial carcinoma. SCH66336 has previously been shown to be a significant anticancer agent by disrupting Ras signalling pathways in a variety of human tumour xenograft models. The current Phase II study shows that a combination of SCH66336 and gemcitabine is a promising new therapy with reduced toxicity and is active as second-line treatment in patients with advanced/metastatic urothelial tract cancer.

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