Chairperson's introduction

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Prostate cancer (PCa) is the most frequently detected cancer in the European Union in men above 50 years of age. The updated results of the GLOBOCAN project report for Europe a 2008 incidence of 323,790 cases and 71,027 deaths [1].

Despite increased awareness of PSA screening and early detection, 30% of the patients will be diagnosed with or progressing to a stage requiring systemic therapy. Since the seminal works of Huggins & Hodge in 1941, androgen deprivation (ADT) by means of surgical castration, LHRH agonist or antagonist, or oestrogens has been the unchallenged upfront treatment of advanced PCa [2]. Initially indicated for symptomatic patients, it is now widely prescribed in men with asymptomatic locally advanced disease or adjuvant to external beam radiation therapy and radical prostatectomy. Except for the adjuvant setting, ADT is considered a palliative therapy. Indeed, despite tumour response of great magnitude, most PCa will adapt to the low testosterone environment and further growth will occur. This phase of adaptation has been called over the years androgen independence, hormone resistance, or, more recently, castration resistance.

Until 2004, the development of castration-resistant PCa (CRPC) was a uniformly lethal event, mainly characterised by the development of bone metastases and their complications, skeletal-related events (SREs). In 2004, two drugs had a profound impact on the treatment of this disease: docetaxel, a taxane chemotherapy, which prolonged survival by about three months, and zoledronic acid, a bone-protecting bisphosphonate, which delays the onset of SREs [3].

This was the beginning of a new era for the treatment of CRPC. The work initiated by many scientists around the world to better understand the pathophysiology of CRPC was starting to pay off. One of the main observations was that, although the tumour develops in a low-testosterone environment, the androgen receptor remains the driving force of the cancer growth. Physicians who commonly prescribed several lines of hormonal agents in these patients had already intuitively perceived this. In addition, several critical pathways involved in CRPC have been characterised and, more importantly, have been used to develop novel therapies [3]. Two successful examples of such bench to bedside strategies are the recently approved denosumab, which targets the Rank/RankL/OPG pathway, and abiraterone, a potent inhibitor of intratumoral steroidogenesis.

As a consequence, the field of CRPC has become a very complex area. This education programme will provide recent insights helping the clinician to apprehend that complexity and understand its challenges. First, we will review the current knowledge on the physiopathology underlying the conversion from a hormone-naive to a castration-resistant PCA. Then, Drs De Bono and Sternberg will illustrate how that new knowledge has led to the development of new hormonal and non-hormonal agents. Finally, Dr Chauchereau will illustrate how animal engineering has built on that knowledge to provide better tools for researchers.

Conflict of interest statement

The author has no conflicts of interest.

References

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