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EDITORIAL

Practice change in the management of metastatic urothelial carcinoma after ASCO 2020

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Abstract

Metastatic urothelial carcinoma (mUC) is an incurable and aggressive disease. In the past decades there have been few effective treatment options that have impacted the prognosis of mUC patients. However, in the last few years, several drugs have emerged as new treatment choices that are changing the therapeutic landscape of mUC. Immune checkpoint inhibitors (ICIs) and targeted agents are useful treatment strategies that have been incorporated into our clinical practice. Nevertheless, cisplatin-based chemotherapy is still the standard of care in the first-line of metastatic disease. The results of the JAVELIN Bladder 100 phase 3 trial were presented at ASCO 2020, this trial evaluated the role of avelumab, an ICI, as maintenance therapy in patients who had not progressed after first-line platinum-based chemotherapy. The trial met its primary endpoint demonstrating an overall survival benefit with avelumab maintenance. In addition, new drugs and combinations are being evaluated to improve the outcomes of second and subsequent lines. Fibroblast growth factor receptor (FGFR) inhibitors and immunotherapy combinations were some of the strategies presented at ASCO 2020 that have shown promising results. Finally, the development of predictive biomarkers that help us in the decision-making process will be one of the most important challenges in the next years.

Key Words: Metastatic urothelial carcinoma; Immune checkpoint inhibitors; Avelumab; JAVELIN Bladder 100; FGFR inhibitors; ASCO 2020

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Core Tip: The landscape of urothelial carcinoma treatment has changed significantly in the last 5 years. Several drugs with different mechanisms of action have emerged as new therapeutic opportunities. At ASCO 2020, avelumab, an immune checkpoint inhibitor, was evaluated as maintenance therapy in the JAVELIN Bladder 100 trial: This was the first clinical trial that improved overall survival in the metastatic setting since the 80s. Moreover, new drugs and combination strategies have shown their potential role as new therapeutic alternatives to increase survival in this disease which has a poor prognosis.

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INTRODUCTION

Bladder cancer is the 10th most common cancer worldwide with an estimated 550000 new cases and 200000 deaths in 2018[1]. Urothelial carcinoma is the predominant histologic type, with approximately 90% of bladder cancers in the United States and Europe[2].

Cisplatin–based chemotherapy has been the standard of care first-line treatment for metastatic urothelial carcinoma (mUC) since 1980[3,4]. However, 50% of patients with mUC are ineligible for cisplatin treatment, and a carboplatin-based regimen is the standard chemotherapy alternative[3,5]. In addition, new drugs, such as immune checkpoint inhibitors (ICIs) and molecular targeted agents, have emerged as new therapeutic choices in the last 5 years and have changed the therapeutic landscape of mUC. ICI is a frontline option for PD-L1 positive metastatic tumors[6-8] and the standard treatment for second-line patients with disease progression after platinum-containing chemotherapy[9,10]. Furthermore, the Food and Drug Administration (FDA) has recently approved two targeted agents, erdafitinib and enfortumab vedotin, for patients with locally advanced or mUC who have previously received platinum-based chemotherapy[11,12].

At ASCO 2020, the JAVELIN Bladder 100 trial was presented as an attractive treatment strategy, which assessed an ICI as maintenance therapy after achieving an objective response or stable disease with first-line chemotherapy. New drugs and combination strategies have also shown their potential role as new therapeutic options to prolong survival in this disease which has a poor prognosis. Our objective is to summarize the most important studies in mUC that have just been presented at ASCO 2020, and how they modify the standard clinical practice.

MOST RELEVANT STUDIES PRESENTED AT ASCO 2020

JAVELIN Bladder 100 was one of the most important studies presented at ASCO 2020[13](Table 1). It is a randomized phase 3 trial, which assessed avelumab (anti-PD-L1 treatment) as maintenance therapy in patients with mUC whose disease had not progressed with first-line platinum–based chemotherapy. Seven hundred patients with unresectable or mUC were randomized 1:1 to receive avelumab (10 mg/kg intravenously every two weeks) and best supportive care (BSC) or BSC alone. Crossover was not allowed within the study. Patients had to achieve an objective response or stable disease after at least four cycles of gemcitabine and cisplatin or carboplatin. A maximum of 6 cycles were allowed. Patients were stratified by best response to first-line chemotherapy (complete/partial response *vs* stable disease) and localization of metastatic disease (visceral *vs* non-visceral). The co-primary endpoint was overall survival (OS) assessed from randomization in all patients and in the PD-L1 positive population. Progression-free survival (PFS), objective response rate (ORR) and safety were secondary endpoints. After a median follow-up of 19 mo avelumab plus BSC significantly prolonged OS *vs* BSC alone in the overall population [21.4 *vs* 14.3

Table 1 Results of the most relevant studies at ASCO 2020

	JAVELIN Bladder 100[13]	FORT-2[16]	BLC2001[14]	COSMIC-021[18]	PEANUT[19]
Phase	3	1b/2	2	1b	2
Treatment	Avelumab + BSC *vs* BSC	Rogaratinib + atezolizumab	Erdafitinib	Cabozantinib + atezolizumab	Pembrolizumab + nab-paclitaxel
Inclusion criteria	Response or stable disease after 1st line platinum-based chemotherapy	Treatment naive	≥ 1 line or cisplatin unfit	≥ 1 line	1-2 lines
		Cisplatin ineligible	FGFR genetic alteration	Prior ICI not allowed	Prior ICI not allowed
		FGFR mRNA overexpression	Prior ICI allowed		
Study population (*n*)	700	31	101	30	70
PFS (mo)	3.7 *vs* 2.0		5.52	5.4	5.0
OS (mo)	21.4 *vs* 14.3		11.3		
ORR (%)	9.7 *vs* 1.4	44	40	27	38.6
Duration of response		NR	5.98	NR	NR

BSC: Best supportive care; ICI: Immune checkpoint inhibitor; FGFR: Fibroblast growth factor receptor; PFS: Progression-free survival; OS: Overall survival; ORR: Objective response rate.

mo; hazard ratio (HR) 0.69, 95%CI: 0.56-0.86; one-sided P = 0.0005]. Fifty-one percent of tumors were PD-L1 positive, 189 in the experimental arm and 169 in BSC arm. In this PD-L1 positive population, avelumab treatment also significantly increased OS (not reached *vs* 17.1 mo; HR 0.56, 95%CI 0.40-0.79; one-sided P = 0.0003). In addition, in the subgroup analysis, OS was longer with avelumab *vs* the control arm across all prespecified subgroups.

Erdafitinib is a novel pan-fibroblast growth factor receptor (FGFR) kinase inhibitor recently approved by the FDA for patients with locally advanced or mUC with susceptible FGFR3 or FGFR2 genetic alterations who have progressed during or following platinum-based chemotherapy. Approval was based on data from the primary analysis of the BLC2001 study, a phase II trial that assessed erdafitinib in this group of patients[11]. The final results of this trial were presented at ASCO 2020, including long-term outcomes and safety data. With a median follow-up of 24 mo, the investigators confirmed an ORR of 40%, with a median duration of response of 6 mo. Furthermore, 31% of responders had a response duration of over 12 mo[14]. Median PFS was 5.52 mo and median OS was 11.3 mo. Central serous retinopathy (CSR) is a known class effect of FGFR inhibitors. CSR occurred in 27% (27/101) of patients, but 85% of those (23/27) were grade 1 or 2. In addition, a phase III trial is evaluating erdafitinib compared to pembrolizumab or chemotherapy in patients with mUC and FGFR alterations who have progressed after 1 or 2 prior treatments[15].

FORT-2 is a phase Ib/II study that evaluates the safety and efficacy of rogaratinib in combination with atezolizumab as first-line treatment in cisplatin–ineligible patients with mUC and FGFR mRNA overexpression[16]. Rogaratinib is a highly selective FGFR1-4 inhibitor that has shown good tolerability and clinical activity as monotherapy in a previous phase I trial[17]. Eleven patients were treated with rogaratinib 800 mg twice daily and atezolizumab 1200 mg every 3 wk, and 16 patients were treated with rogaratinib 600 mg twice daily and atezolizumab 1200 mg every 3 wk. The ORR was 44%, with a disease control rate of 68%. The duration of response was not reached. The safety profile was manageable with diarrhea (58%), hyperphosphatemia (45%) and urinary tract infection (36%) being the most common treatment-emergent adverse events.

The COSMIC-021 and PEANUT trials assessed the combination of an ICI with a targeted-agent or chemotherapy, respectively, in patients with mUC previously treated. COSMIC-021 is a multi-cohort phase 1b study that evaluates the immunomodulatory effect of cabozantinib (40 mg daily) in combination with

atezolizumab (1200 mg every 3 wk)[18]. Thirty patients with mUC were included. The ORR was 27% including 2 patients with a complete response. The median duration of response was not reached. The median PFS was 5.4 mo. Asthenia (37%), diarrhea (27%), lower appetite (23%), increased transaminases (23%) and mucosal inflammation (20%) were the most frequent treatment-related adverse events (TRAEs). PEANUT is a phase 2 study evaluating the combination of pembrolizumab and nab-paclitaxel in patients previously treated with chemotherapy[19]. Sixty-five patients were included. The median PFS was 5 mo, with an ORR of 38.6%. The median duration of response was not reached. This combination showed an expected safety profile with alopecia (71%), neutropenia (32%) and peripheral neuropathy (34%) as the most common TRAEs.

Finally, at ASCO 2020 the analysis of tumor microenvironment biomarkers from the IMvigor130 study was presented[20]. This phase 3 trial compared atezolizumab with or without platinum-based chemotherapy *vs* placebo plus platinum-based chemotherapy in the first-line treatment of mUC. The addition of atezolizumab to platinum-based chemotherapy prolonged PFS, which was one of the co-primary endpoints of the trial. In the biomarker analysis, clinical outcomes were evaluated by PD-L1 status, T-effector and TGF-β-response gene expression signature, tumor mutational burden and APOBEC mutation analysis. This exploratory analysis provided additional evidence for biomarkers previously associated with response and resistance to ICI.

HOW WILL ASCO 2020 CHANGE CLINICAL PRACTICE IN MUC?

Cisplatin-based chemotherapy is the standard first-line treatment for mUC. JAVELIN Bladder 100 met its primary endpoint, demonstrating significantly longer OS with first-line maintenance avelumab plus BSC compared to BSC alone, in both the overall and PD-L1 positive populations. In addition, all prespecified subgroups benefited from this treatment. According to these data, first-line maintenance avelumab should be offered in patients with mUC who achieved an objective response or stable disease with platinum-based chemotherapy. This includes approximately 85% of patients that start first-line platinum-based chemotherapy[4,5]. Those with primary refractory disease (15%) should receive second-line treatment with ICIs. Nevertheless, only 25%-55% of patients that progress after first-line treatment receive new therapy[21-23]. A maintenance strategy is a chance to increase the number of patients that will receive ICI therapy. In this context, there are other trials assessing the combination of ICI and chemotherapy in first-line treatment. The IMvigor130 study has recently been published[24]. Its co-primary endpoints were PFS and OS. The combination of atezolizumab with platinum-based chemotherapy as first-line treatment prolonged PFS in patients with mUC. A statistically significant OS advantage was not observed in the interim analysis, however, these data are immature and a longer follow-up is needed. First-line maintenance avelumab in patients with mUC whose disease has not progressed with platinum-based chemotherapy should be considered a new standard of care.

Despite the approval of erdafitinib by the FDA, the European Medicines Agency (EMA) has not authorized it yet. The benefit from FGFR inhibitors in mUC patients with FGFR alterations has been demonstrated in different clinical trials. The long-term outcomes from the phase II erdafitinib study confirm the efficacy results observed in the interim analysis. In addition, new strategies are being evaluated such as combinations with other drugs and their role in prior lines or earlier stages. Although data from phase 3 trials are pending and some strategies are still under development, FGFR inhibitors will probably be included in the treatment algorithm of mUC in the near future.

ICI is the standard of care for the second-line treatment of mUC. Despite this, only a subset of patients responds to these therapies. The research for new strategies to increase the number of patients that benefit from ICI is one of the most important points in mUC management. In this direction, several clinical trials are assessing different combinations with promising results in phase II studies. Nevertheless, no randomized trials have shown superiority over ICI monotherapy. However, the probable position of immunotherapy in the first-line setting could modify these strategies.

PD-L1 expression in ineligible cisplatin patients is the only biomarker that has been integrated in clinical practice regarding ICI use in mUC[6]. The development of biomarkers could be useful to identify patients who will benefit from the different treatment strategies, focusing on their potential predictive role rather than their solely

prognostic nature. Biomarkers associated with response and intrinsic resistance to ICIs have previously been identified in urothelial cancer. However, predictive biomarkers for combination regimens or maintenance therapy remain uncertain. It is necessary to integrate biomarker analysis in every clinical trial to identify patients who will benefit from each treatment strategy.

CONCLUSION

JAVELIN Bladder 100 was one of the most important studies presented at ASCO 2020. Avelumab maintenance treatment after first-line chemotherapy will change our standard of practice. Other clinical trials in this setting could offer new treatment strategies. Biomarker analysis should help us to identify the best treatment option in every single patient. Moreover, new drugs are being incorporated in the therapeutic landscape of mUC. The integration of all these treatment opportunities for our patients will be one of the most important challenges in mUC management.

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