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Avelumab first-line maintenance plus best supportive care (BSC) vs. BSC alone for advanced urothelial carcinoma: JAVELIN Bladder 100 Asian subgroup analysis

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Abstract

Background: The phase 3 JAVELIN Bladder 100 trial showed significantly prolonged overall survival (OS) with avelumab first-line maintenance + best supportive care (BSC) vs. BSC alone in patients with advanced urothelial carcinoma (UC) that had not progressed with first-line platinum-containing chemotherapy. Here, efficacy and safety were assessed from the initial analysis of the JAVELIN Bladder 100 trial (data cutoff October 21, 2019) in patients enrolled in Asian countries.

Methods: Patients with locally advanced or metastatic UC that had not progressed with 4 to 6 cycles of first-line platinum-containing chemotherapy (gemcitabine + cisplatin or carboplatin) were randomized 1:1 to receive avelumab first-line maintenance + BSC or BSC alone, stratified by best response to first-line chemotherapy and visceral vs. nonvisceral disease when initiating first-line chemotherapy. The primary endpoint was OS assessed from randomization in all patients and patients with PD-L1+ tumors (Ventana SP263 assay). Secondary endpoints included progression-free survival (PFS) and safety.

Results: A total of 147 patients in JAVELIN Bladder 100 were enrolled in Asian countries (Hong Kong, India, Japan, South Korea, and Taiwan). In this Asian subgroup, 73 and 74 patients received avelumab + BSC or BSC alone, respectively. Median OS was 25.3 months (95% CI, 18.6 to not estimable [NE]) in the avelumab + BSC arm vs. 18.7 months (95% CI, 12.8−NE) in the BSC alone arm (hazard ratio [HR], 0.74 [95% CI, 0.43−1.26]); median PFS was 5.6 months (95% CI, 2.0−7.5) vs. 1.9 months (95% CI, 1.9−1.9), respectively (HR, 0.58 [95% CI, 0.38−0.86]). In the avelumab + BSC vs. BSC alone arms, grade ≥3 treatment-emergent adverse events (any causality)

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occurred in 44.4% vs. 16.2%, respectively. The most common grade ≥3 treatment-emergent adverse events in the avelumab + BSC arm were anemia (9.7%), amylase increased (5.6%), and urinary tract infection (4.2%).

Conclusions: Efficacy and safety results for avelumab first-line maintenance in the Asian subgroup of JAVELIN Bladder 100 were generally consistent with those in the overall trial population. These data support the use of avelumab first-line maintenance as standard of care for Asian patients with advanced UC that has not progressed with first-line platinum-containing chemotherapy. NCT02603432

Keywords: Avelumab; Immunotherapy; Immune checkpoint inhibitors; Maintenance treatment; Asia; Advanced urothelial carcinoma

1. Introduction

Bladder cancer, which accounts for >90% of cases of urothelial carcinoma (UC), is the 14th most common cancer in Asia, with an estimated incidence of 208,091 in 2020 [1]. In various countries worldwide, including Asian countries, platinum-containing chemotherapy is a standard first-line (1L) treatment for patients with advanced UC, with patients receiving gemcitabine + cisplatin or carboplatin depending on eligibility [2−4]. Although most patients (≈65%−79%) will respond or achieve disease control with chemotherapy, long-term benefit is limited, with short median durations of both progression-free survival (PFS; ≈6−8 months) and overall survival (OS; ≈12−15 months) [5−10]. In an attempt to prolong the benefit of chemotherapy, strategies such as switch maintenance therapy have been investigated, in which patients with non-progressive disease following 1L treatment are given sequential treatment with an alternative drug with a different mechanism of action [11]. Immune checkpoint inhibitors, e.g., anti−PD-1/PD-L1 antibodies, which prime immune responses against tumor cells, may result in enhanced antitumor activity when used as maintenance therapy following 1L chemotherapy.

Avelumab, an anti−PD-L1 monoclonal antibody, has been approved in various countries worldwide, including Asian countries, for 1L maintenance treatment of patients with advanced UC that has not progressed with 1L platinum-containing chemotherapy [12]. Approval was based on initial results from the phase 3 JAVELIN Bladder 100 trial, which showed significantly prolonged OS with avelumab 1L maintenance + best supportive care (BSC) vs. BSC alone in this patient population. Median OS in the avelumab + BSC vs. BSC alone arms was 21.4 vs. 14.3 months, respectively (hazard ratio [HR], 0.69 [95% CI, 0.56−0.86; 2-sided $P = 0.001$]) [13]. Additionally, the safety profile of avelumab 1L maintenance was consistent with previous avelumab monotherapy studies, and no new safety signals were identified [13,14]. These findings led to the recommendation of 1L platinum-containing chemotherapy followed by avelumab 1L maintenance as standard of care for patients with advanced UC without disease progression in international treatment guidelines, including those published by the Japanese Urological Association [2,3,15].

A subgroup analysis of patients enrolled in Japan in JAVELIN Bladder 100 was reported previously [16]. We report results of a post hoc subgroup analysis of all patients enrolled in Asian countries.

2. Methods

2.1. Study design and patients

The design of the international, open-label, randomized, phase 3 JAVELIN Bladder 100 (NCT02603432) trial was reported previously [13]. Briefly, eligible patients were aged ≥18 years (≥20 years in Japan) and had histologically confirmed, unresectable locally advanced or metastatic UC that had not progressed with 4 to 6 cycles of 1L chemotherapy (gemcitabine + cisplatin or carboplatin). Other eligibility criteria included an Eastern Cooperative Oncology Group performance status (ECOG PS) of 0 to 1 and adequate hematologic, hepatic, and renal function. After a 4 to 10-week interval from last dose of chemotherapy, patients were randomized 1:1 to receive avelumab + BSC (avelumab arm) or BSC alone (control arm) stratified by best response to 1L chemotherapy (complete response [CR] or partial response [PR] vs. stable disease) and metastatic disease site at chemotherapy initiation (visceral vs. nonvisceral). Patients in the avelumab arm received avelumab 10 mg/kg as a 1-hour intravenous infusion every 2 weeks + BSC. BSC, which included antibiotics, nutritional support, hydration, and pain management, was administered according to local practice based on the clinical judgement of the investigator and the needs of each patient. Other systemic antitumor therapy was not permitted, but palliative local radiotherapy for isolated lesions was acceptable. Treatment continued until confirmed progression, unacceptable toxicity, patient withdrawal, or other criteria for discontinuation occurred. The trial was conducted in accordance with the Declaration of Helsinki and Good Clinical Practice guidelines defined by the International Council of Harmonisation. The protocol, amendments, and informed-consent forms were approved by the institutional review board or independent ethics committee at each trial site, and all patients provided written consent.

2.2. Study endpoints and assessments

The primary endpoint was OS, assessed in all randomized patients and in patients with PD-L1+ tumors. Secondary endpoints included PFS; confirmed objective response (CR or PR) per Response Evaluation Criteria in Solid Tumors version 1.1 (RECIST 1.1) by blinded independent central review (BICR); disease control (CR, PR, non-CR/non-progressive disease, or stable disease for ≥6 weeks); and safety. All endpoints were measured from randomization (i.e., post chemotherapy). Tumor assessments were performed every 8 weeks for 12 months, then every 12 weeks until confirmed disease progression according to RECIST 1.1 by BICR. PD-L1+ status was defined as PD-L1 expression in ≥25% of tumor cells or in ≥25% or 100% of tumor-associated immune cells if the percentage of immune cells present was >1% or ≤1% (Ventana SP263 PD-L1 immunohistochemistry assay per manufacturer's instructions). Adverse events (AEs) were graded according to the National Cancer Institute Common Terminology Criteria for Adverse Events version 4.03 and coded using Medical Dictionary for Regulatory Activities (version 22.1) preferred terms.

2.3. Statistical analysis

The Asian subgroup comprised all randomized patients enrolled at sites in Asian countries (Hong Kong, India, Japan, South Korea, and Taiwan). OS and PFS were estimated by Kaplan-Meier analysis, and HRs and associated 95% CIs were calculated using a Cox proportional hazards model. The objective response rate and disease control rate were calculated by treatment group, and exact 2-sided 95% CIs were calculated using the Clopper−Pearson method. Safety was assessed in all patients who received ≥1 dose of avelumab in the avelumab arm and in all patients who completed the cycle 1 day 1 visit in the control arm. Statistical analyses were conducted using SAS, version 9.4. The data cutoff date was October 21, 2019.

3. Results

3.1. Patients

In the overall JAVELIN Bladder 100 study, 700 patients were randomized to receive avelumab + BSC ($n = 350$) and BSC alone ($n = 350$); 147 patients were enrolled across Asia, at sites in Hong Kong, India, Japan, South Korea, and Taiwan (21.0% of the total study population). This comprised 73 patients in the avelumab arm and 74 in the control arm. A total of 71 patients (48.3%) had a PD-L1+ tumor (avelumab, $n = 40$ [54.8%]; control, $n = 31$ [41.9%]). Baseline characteristics were generally well balanced between treatment arms in the Asian subgroup (Table 1). Of note, the majority of patients across both arms had received gemcitabine + cisplatin (avelumab, $n = 51$ [69.9%]; control, $n = 53$ [71.6%]). Baseline characteristics by country are provided in Supplementary Table 1.

At data cutoff, 22 patients (30.1%) in the avelumab arm and 5 (6.8%) in the control arm remained on study treatment. Among patients who discontinued treatment, the most common reason was disease progression (avelumab, $n = 38$ [52.1%]; control, $n = 57$ [77.0%]). Subsequent anticancer drug therapy was received by 29 patients (39.7%) in the avelumab arm and 48 (64.9%) in the control arm. This included an anti−PD-1/PD-L1 antibody in 16 patients (21.9%) in the avelumab arm and 37 (50.0%) in the control arm and fibroblast growth factor receptor inhibitor in 1 (1.4%) and 0 patients, respectively.

3.2. Efficacy

Median follow-up for OS in the Asian subgroup was 18.8 months (95% CI, 14.3−23.7) in the avelumab arm and 20.0 months (95% CI, 16.6−24.1) in the control arm. Median OS was 25.3 months (95% CI, 18.6 to not estimable [NE]) in the avelumab arm and 18.7 months (95% CI, 12.8−NE) in the control arm (HR, 0.74 [95% CI, 0.43−1.26]) (Fig. 1A); 1-year OS rates were 78.3% (95% CI, 65.9−86.6) vs. 67.4% (95% CI, 53.9−77.7), respectively. In patients with PD-L1+ tumors, median OS was 26.1 months (95% CI, 18.2−NE) in the avelumab arm and 19.4 months (95% CI, 11.9-NE) in the control arm (HR, 0.66 [95% CI, 0.28−1.54); 1-year OS rates were 85.9% (95% CI, 69.2−93.9) vs. 69.8% (95% CI, 48.0−83.8), respectively (Fig. 1B). In patients with PD-L1− tumors, median OS was 24.7 months (95% CI, 11.2−NE) and 13.4 months (95% CI, 9.8−NE) in the avelumab and control arms, respectively (Supplementary Fig. 1A). In the avelumab vs. control arms, median PFS was 5.6 months (95% CI, 2.0−7.5) vs. 1.9 months (95% CI, 1.9−1.9; HR, 0.58 [95% CI, 0.38−0.86]) (Fig. 2A). In the PD-L1+ population, median PFS was 6.8 months (95% CI, 1.9-11.2) in the avelumab arm vs. 1.9 months (95% CI, 1.9−3.8) in the control arm (HR, 0.63 [95% CI, 0.34−1.17]) (Fig. 2B). In the PD-L1− population, median PFS was 2.6 months (95% CI, 1.9−7.5) and 1.8 months (95% CI, 1.8−1.9) in the avelumab and control arms, respectively (Supplementary Fig. 1B).

Objective response rates in the avelumab and control arms were 9.6% (95% CI, 3.9−18.8) and 2.7% (95% CI, 0.3−9.4), respectively (Table 2), including 4 CRs and 3 PRs in the avelumab arm vs. 2 CRs in the control arm.

3.3. Safety

Among all treated patients in the Asian subgroup, median duration of treatment was 35.0 weeks (range, 2.0−159.9) in the avelumab arm and 9.1 weeks (range, 0.1−155.6) in the control arm.

Any-grade treatment-emergent AEs (TEAEs; any causality) occurred in 70 of 72 patients (97.2%) in the avelumab arm and 51 of 74 patients (68.9%) in the control arm,

Table 1
Selected baseline characteristics in the Asian subgroup.

	Overall Asian subgroup ($n = 147$)		PD-L1+ population ($n = 71$)	
	Avelumab + BSC ($n = 73$)	BSC alone ($n = 74$)	Avelumab + BSC ($n = 40$)	BSC alone ($n = 31$)
Age, median (range), years	69.0 (37.0–90.0)	70.0 (43.0–83.0)	70.0 (37.0–90.0)	70.0 (49.0–83.0)
Sex, n (%)				
Male	51 (69.9)	52 (70.3)	23 (57.5)	20 (64.5)
Female	22 (30.1)	22 (29.7)	17 (42.5)	11 (35.5)
ECOG PS, n (%)				
0	51 (69.9)	49 (66.2)	27 (67.5)	23 (74.2)
1	21 (28.8)	25 (33.8)	12 (30.0)	8 (25.8)
2	1 (1.4)	0	1 (2.5)	0
Site of metastasis at start of chemotherapy, n (%)				
Visceral	34 (46.6)	37 (50.0)	12 (30.0)	16 (51.6)
Nonvisceral	39 (53.4)	37 (50.0)	28 (70.0)	15 (48.4)
PD-L1 status, n (%)				
Positive	40 (54.8)	31 (41.9)	40 (100)	31 (100)
Negative	27 (37.0)	27 (36.5)	0	0
Unknown	6 (8.2)	16 (21.6)	0	0
1L chemotherapy regimen, n (%)				
Gemcitabine + cisplatin	51 (69.9)	53 (71.6)	29 (72.5)	25 (80.6)
Gemcitabine + carboplatin	19 (26.0)	20 (27.0)	9 (22.5)	6 (19.4)
Gemcitabine + carboplatin + cisplatin[a]	3 (4.1)	1 (1.4)	2 (5.0)	0
Best response to 1L chemotherapy, n (%)				
CR or PR	50 (68.5)	51 (68.9)	27 (67.5)	23 (74.2)
SD	23 (31.5)	23 (31.1)	13 (32.5)	8 (25.8)
Creatinine clearance at baseline, n (%)				
≥60 mL/min	31 (42.5)	29 (39.2)	16 (40.0)	15 (48.4)
<60 mL/min	42 (57.5)	43 (58.1)	24 (60.0)	14 (45.2)
Unknown	0	2 (2.7)	0	2 (6.5)
Site of primary tumor, n (%)				
Upper tract	35 (47.9)	38 (51.4)	19 (47.5)	17 (54.8)
Lower tract	38 (52.1)	36 (48.6)	21 (52.5)	14 (45.2)

1L = first line; BSC = best supportive care; CR = complete response; ECOG PS = Eastern Cooperative Oncology Group performance status; PR = partial response; SD = stable disease.
[a] Patients who switched platinum regimens while receiving 1L chemotherapy.

including grade ≥3 TEAEs in 32 (44.4%) and 12 patients (16.2%), respectively (Table 3). In the avelumab arm, the most common any-grade TEAEs were pyrexia ($n = 17$ [23.6%]), nasopharyngitis ($n = 14$ [19.4%]), constipation ($n = 14$ [19.4%]), and rash ($n = 14$ [19.4%]); the most common grade ≥3 TEAEs were anemia ($n = 7$ [9.7%]), amylase increased ($n = 4$ [5.6%]), and urinary tract infection ($n = 3$ [4.2%]). TEAEs led to interruption of avelumab in 28 patients (38.9%) and discontinuation of avelumab in 6 (8.3%).

Any-grade treatment-related AEs (TRAEs) occurred in 48 of 72 patients (66.7%) in the avelumab arm and 0 patients in the control arm, including grade ≥3 TRAEs in 7 patients (9.7%) in the avelumab arm. In the avelumab arm, the most common any-grade TRAEs were pyrexia ($n = 9$ [12.5%]), chills ($n = 8$ [11.1%]), and hypothyroidism ($n = 8$ [11.1%]); the most common grade ≥3 TRAE was anemia ($n = 3$ [4.2%]).

In the avelumab arm, immune-related AEs (irAEs) of any grade occurred in 20 patients (27.8%), including grade ≥3 irAEs in 3 (4.2%). The most common irAEs were hypothyroidism ($n = 6$ [8.3%]), rash ($n = 5$ [6.9%]), purpura ($n = 2$ [2.8%]), hyperthyroidism ($n = 2$ [2.8%]), and adrenal insufficiency ($n = 2$ [2.8%]). Infusion-related reactions occurred in 19 patients (26.4%); none were grade ≥3. Serious AEs occurred in 18 patients (25.0%) in the avelumab arm and 6 (8.1%) in the control arm, including serious TRAEs in 6 (8.3%) and 0 patients, respectively. TEAEs led to death in 1 patient (1.4%) in the avelumab arm (sepsis) and 1 patient (1.4%) in the control arm (chronic obstructive pulmonary disease).

4. Discussion

Results from the JAVELIN Bladder 100 trial showed that avelumab 1L maintenance + BSC resulted in significantly prolonged OS vs. BSC alone in patients with advanced UC that had not progressed with 1L platinum-containing chemotherapy, both in the overall and PD-L1+ populations [13]. Findings from the Asian subgroup were generally consistent with those in the overall population [13] within the limitations of an underpowered exploratory subgroup analysis, further supporting the efficacy of avelumab 1L maintenance.

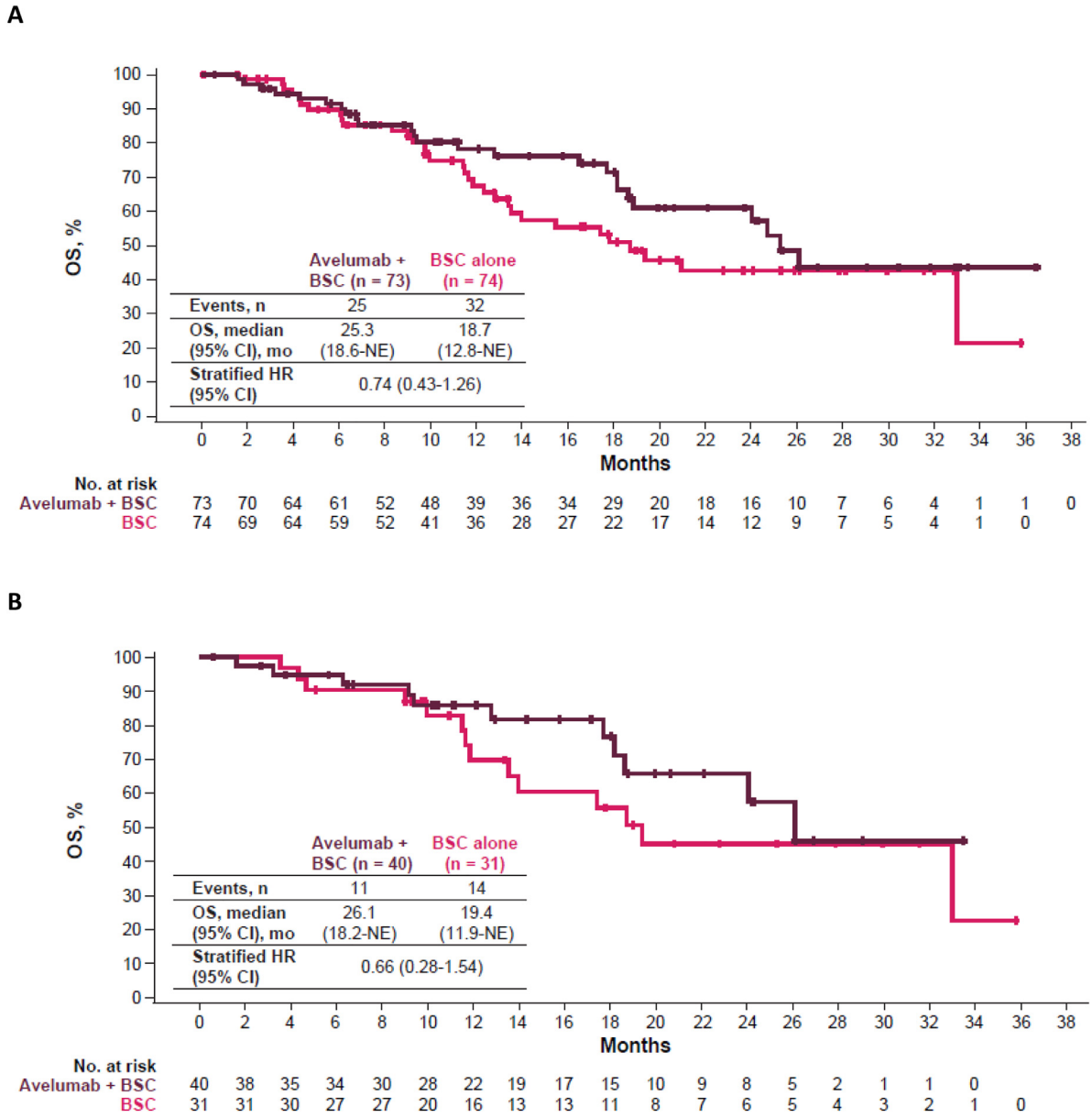

Fig. 1. OS in (A) the overall Asian subgroup and (B) the PD-L1+ population. BSC = best supportive care; HR = hazard ratio; NE = not estimable; OS = overall survival.

Baseline characteristics in the Asian subgroup were balanced between treatment arms and were generally similar to those in the overall population. However, compared with the overall population, a higher proportion of the Asian subgroup had received 1L gemcitabine + cisplatin (Asian population, 69.9% in the avelumab arm and 71.6% in the control arm; overall population, 52.3% and 58.9%, respectively) [13]. Reasons for this higher number are unclear but may be due to differences in patient characteristics at start of chemotherapy (not collected) or differences in local practice. Interestingly, a higher proportion of the Asian subgroup also had creatinine clearance <60 ml/min (assessed at randomization, post chemotherapy; Asian population, 57.5% in the avelumab arm and 58.1% in the control arm; overall population, 48.0% and 42.3%, respectively) [16]. Some slight imbalances in baseline characteristics were observed between individual countries vs. the overall Asian subgroup, including a higher proportion of patients with ECOG PS 1 in South Korea (62.2% vs. 31.3%), lower proportion with PD-L1+ tumors in South Korea (37.8% vs. 48.3%), lower proportion with CR or PR as best response to 1L chemotherapy in Japan (60.3% vs. 68.7%), and higher proportion with creatinine clearance <60 ml/min in Taiwan (71.4% vs. 57.8%). However, given this analysis was exploratory and population sizes in individual countries were small, these differences were not considered clinically relevant.

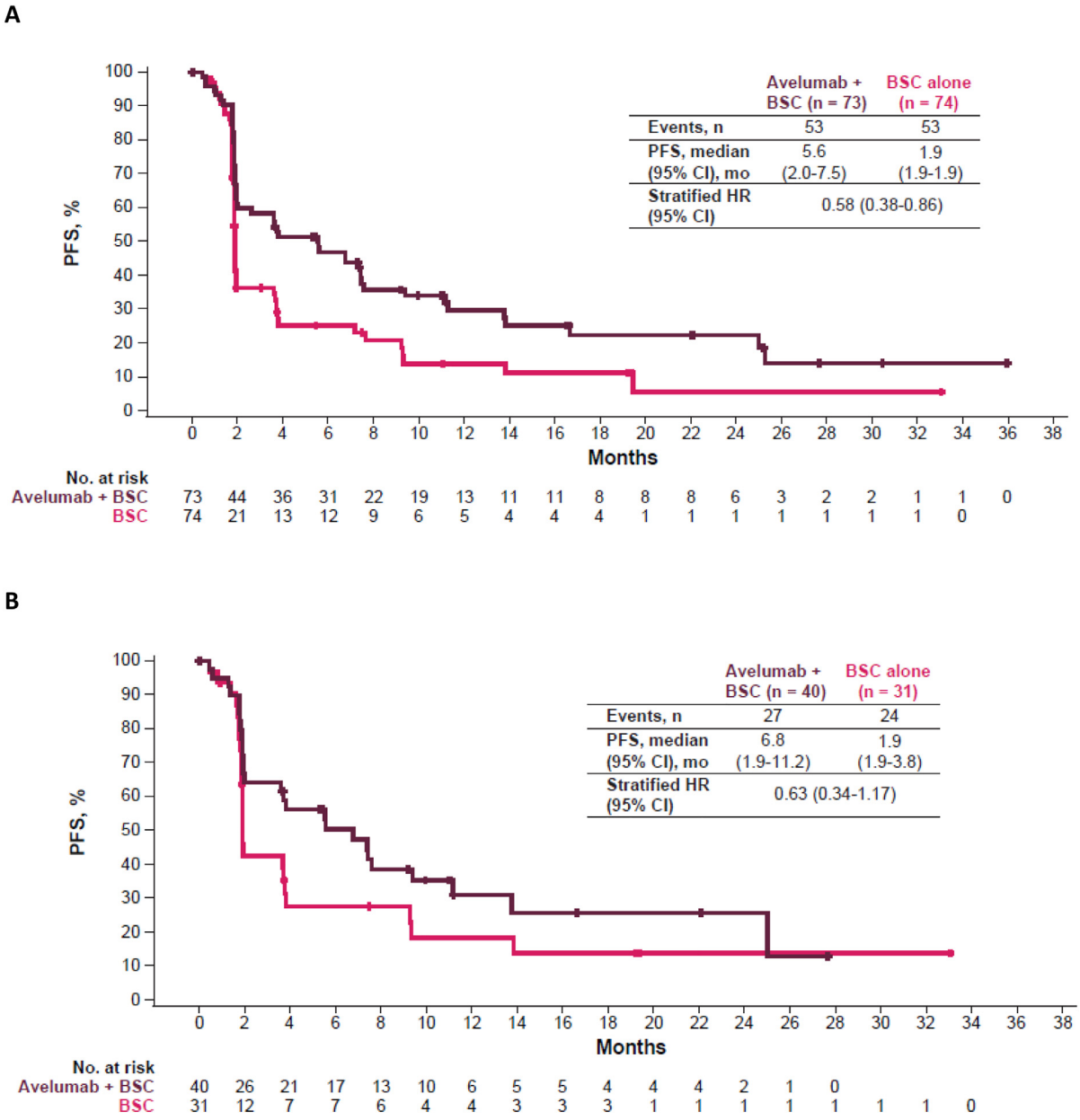

Fig. 2. PFS in (A) the overall Asian subgroup and (B) the PD-L1+ population. BSC = best supportive care; HR = hazard ratio; PFS = progression-free survival.

Efficacy benefits of avelumab 1L maintenance in the Asian subgroup were similar to those reported in the overall population, with prolonged OS observed with avelumab + BSC vs. BSC alone in both populations (Asian population, HR of 0.74 [95% CI, 0.43−1.26]; overall population, HR of 0.69 [95% CI, 0.56−0.86]) [13]. The longer median OS in the Asian vs. overall population in both arms is likely to be multifactorial and may be partially explained by the higher proportion of patients in the Asian population who received cisplatin-based chemotherapy, which may be more active than carboplatin-based chemotherapy and/or is administered to patients who are fitter and may have a better prognosis. In patients with PD-L1+ tumors in both the Asian and overall populations, longer OS was observed in the avelumab vs. control arm (Asian population, HR of 0.66 [95% CI, 0.28−1.54]; overall population, HR of 0.56 [95% CI, 0.40−0.79]) [13]. Similarly, in both populations avelumab 1L maintenance prolonged PFS vs. BSC alone [13]. The proportion of patients receiving subsequent anticancer drug therapy was similar in the Asian and overall populations (Asian population, 39.7% in the avelumab arm and 64.9% in the control arm; overall population, 42.3% and 61.7%, respectively); however, in the avelumab arm, more patients in the Asian subgroup had received a subsequent anti−PD-1/PD-L1 antibody vs. the overall population (21.9% vs. 6.3%) [13].

Table 2
Confirmed best overall response and ORR per BICR in the overall Asian subgroup and PD-L1+ population.

	Overall Asian subgroup ($n = 147$)		PD-L1+ population ($n = 71$)	
	Avelumab + BSC ($n = 73$)	BSC alone ($n = 74$)	Avelumab + BSC ($n = 40$)	BSC alone ($n = 31$)
Confirmed best overall response, n (%)				
CR	4 (5.5)	2 (2.7)	3 (7.5)	1 (3.2)
PR	3 (4.1)	0	2 (5.0)	0
Stable disease	8 (11.0)	9 (12.2)	4 (10.0)	6 (19.4)
Non-CR/non-progressive disease	16 (21.9)	8 (10.8)	11 (27.5)	3 (9.7)
Progressive disease	29 (39.7)	40 (54.1)	14 (35.0)	17 (54.8)
Not evaluable	13 (17.8)	15 (20.3)	6 (15.0)	4 (12.9)
ORR (95% CI), %	9.6 (3.9–18.8)	2.7 (0.3–9.4)	12.5 (4.2–26.8)	3.2 (0.1–16.7)
Disease control rate (95% CI), %	42.5 (31.0–54.6)	25.7 (16.2–37.2)	50.0 (33.8–66.2)	32.3 (16.7–51.4)

BICR = blinded independent central review; BSC = best supportive care; CR = complete response; ORR = objective response rate; PR = partial response.

The safety profile of avelumab in the Asian subgroup was generally consistent with that in the overall population [13]. Slight differences were seen in incidence of some any-grade TEAEs in the avelumab arm of the Asian vs. overall population, including a lower incidence of fatigue (12.5% vs. 17.7%) and a higher incidence of pyrexia (23.6% vs. 14.8%), rash (19.4% vs. 11.6%), anemia (16.7% vs. 11.3%), and hematuria (16.7% vs. 10.5%); however, no new safety signals specific to Asian patients were identified. Additionally, the incidence of irAEs was similar between the Asian and overall populations (27.8% vs. 29.4%) [13]. The similarity of these safety data suggest that despite the higher proportion of patients receiving 1L gemcitabine + cisplatin in the Asian vs. overall population, avelumab 1L maintenance therapy is well tolerated following standard-of-care 1L chemotherapy in the Asian population.

Table 3
Summary of the most common TEAEs in the overall Asian subgroup.

	Overall Asian subgroup ($n = 146$)			
	Avelumab + BSC ($n = 72$)		BSC alone ($n = 74$)	
Events, n (%)	Any grade	Grade ≥3	Any grade	Grade ≥3
Any TEAE	70 (97.2)	32 (44.4)	51 (68.9)	12 (16.2)
Pyrexia	17 (23.6)	0	4 (5.4)	0
Nasopharyngitis	14 (19.4)	0	7 (9.5)	0
Constipation	14 (19.4)	0	3 (4.1)	0
Rash	14 (19.4)	0	1 (1.4)	0
Anemia	12 (16.7)	7 (9.7)	2 (2.7)	2 (2.7)
Hematuria	12 (16.7)	1 (1.4)	8 (10.8)	3 (4.1)
Urinary tract infection	10 (13.9)	3 (4.2)	3 (4.1)	1 (1.4)
Arthralgia	10 (13.9)	0	2 (2.7)	0
Fatigue	9 (12.5)	1 (1.4)	3 (4.1)	0
Vomiting	9 (12.5)	1 (1.4)	3 (4.1)	0
Back pain	9 (12.5)	0	9 (12.2)	2 (2.7)
Chills	9 (12.5)	0	2 (2.7)	0
Nausea	9 (12.5)	0	2 (2.7)	0
Diarrhea	9 (12.5)	0	1 (1.4)	0
Hypothyroidism	8 (11.1)	0	0	0
Amylase increased	7 (9.7)	4 (5.6)	0	0

Table shows TEAEs of any grade occurring in ≥10% or grade ≥3 TEAEs occurring in ≥5% of patients in either arm.
BSC = best supportive care; TEAE = treatment-emergent adverse event.

Results from JAVELIN Bladder 100, including an analysis of the Japanese subgroup [16], led to the recommendation of avelumab 1L maintenance as standard of care for patients with advanced UC that has not progressed with 1L platinum-containing chemotherapy in international treatment guidelines, including those developed by the Japanese Urological Association [2,3,15]. Results from this analysis, specifically in patients enrolled in Asia, further support the inclusion of avelumab 1L maintenance in these treatment guidelines.

In conclusion, these data support the use of avelumab 1L maintenance as standard of care for Asian patients with advanced UC that has not progressed with 1L platinum-containing chemotherapy.

Data sharing statement

Upon request, and subject to review, Pfizer will provide the data that support the findings of this study. Subject to certain criteria, conditions and exceptions, Pfizer may also provide access to the related individual de-identified participant data. See https://www.pfizer.com/science/clinical-trials/trial-data-and-results for more information.

Declaration of Competing Interest

J.-L. Lee reports stock and other ownership interests in Amgen, BeiGene, Black Diamond Therapeutics, Innovent Biologics, Johnson & Johnson/Janssen, Karyopharm Therapeutics, Myovant Sciences, the healthcare business of Merck KGaA, Darmstadt, Germany, and Zymeworks; has received honoraria from Astellas Pharma, AstraZeneca, Bristol Myers Squibb, Merck & Co., Kenilworth, NJ, and Pfizer; served in a consulting or advisory role for AstraZeneca,

Bristol Myers Squibb, GI Innovation, Merck & Co., Kenilworth, NJ, Oscotec, Pfizer, Sanofi Korea, and the healthcare business of Merck KGaA, Darmstadt, Germany; and has received research funding from Amgen, AstraZeneca/MedImmune, Bayer Schering Pharma, Bristol Myers Squibb, GI Innovation, Janssen, Merck & Co., Kenilworth, NJ, Novartis, Pfizer, Roche/Genentech, and Seagen.

C. Desai has served in a consulting or advisory role for Novartis, Pfizer, Roche, and the healthcare business of Merck KGaA, Darmstadt, Germany; and has provided speakers services for Dr. Reddy's, Lupin Pharmaceuticals, Novartis, and Pfizer.

S. H. Park has served in a consulting or advisory role for Janssen Oncology; has received honoraria from Ono Pharma Korea, Pfizer, and the healthcare business of Merck KGaA, Darmstadt, Germany; and has received research funding from Ono Pharmaceutical and Sanofi.

N. Tsuchiya has received honoraria from Astellas, Bayer, Bristol Myers Squibb, Eisai, Janssen, Merck & Co., Kenilworth, NJ, Pfizer, Takeda, and the healthcare business of Merck, KGaA, Darmstadt, Germany; and has received institutional research funding from Eisai.

P.-J. Su has served in a consulting or advisory role for Bristol Myers Squibb, Merck & Co., Kenilworth, NJ, Ono Pharmaceutical, Pfizer, and the healthcare business of Merck KGaA, Darmstadt, Germany; and has provided speakers services for Bristol Myers Squibb, Merck & Co., Kenilworth, NJ, Ono Pharmaceutical, Pfizer, Roche, and the healthcare business of Merck KGaA, Darmstadt, Germany.

T. T. W. Chan has nothing to disclose.

H. Gurney has served in consulting or advisory roles for AstraZeneca, Bristol Myers Squibb, Ipsen, Janssen-Cilag, Merck & Co., Kenilworth, NJ, Pfizer, Roche, and the healthcare business of Merck KGaA, Darmstadt, Germany; reports speakers services for the healthcare business of Merck KGaA, Darmstadt, Germany; and has received travel and accommodations expenses from AstraZeneca.

S. Gao reports employment by Merck Pte. Ltd., Singapore, an affiliate of Merck KGaA, Darmstadt, Germany at the time the research was conducted.

J. Wang reports employment by Pfizer.

R. Sandner reports employment by and stock and other ownership interests in Pfizer.

A. di Pietro reports employment by and stock and other ownership interests in Pfizer.

M. Eto has served in a consulting or advisory role for AstraZeneca, Bristol Myers Squibb, Chugai Pharma, Eisai, Johnson & Johnson, Ono Pharmaceutical, Pfizer, Takeda, and the healthcare business of Merck KGaA, Darmstadt, Germany; has provided speakers services for Bristol Myers Squibb, Janssen, Merck & Co., Kenilworth, NJ, Novartis, Ono Pharmaceutical, Pfizer, Takeda, and the healthcare business of Merck KGaA, Darmstadt, Germany; and has received research funding from Astellas Pharma, Bayer, Ono Pharmaceutical, Sanofi, and Takeda.

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Supplementary materials

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