Nivolumab and Ipilimumab (for malignant mesothelioma)

NB: This regimen uses different doses to the nivolumab/ipilimumab combination regimen used in the treatment of melanoma and renal cell carcinoma
Check that the correct dosing regimen is being used

Indication
First line treatment of malignant mesothelioma

Regimen details
Nivolumab 360mg every 3 weeks
Ipilimumab 1mg/kg every 6 weeks

Cycle frequency
As above

Number of cycles
Given until disease progression, unacceptable toxicity or a maximum of 2 years treatment (equivalent to 35 cycles of nivolumab).
If ipilimumab is discontinued due to toxicity, then nivolumab may be continued
If nivolumab is discontinued due to toxicity, then ipilimumab must also be discontinued

Administration
Nivolumab is given in 100ml 0.9% sodium chloride over 30 minutes
Ipilimumab is given in 50ml 0.9% sodium chloride over 30 minutes

Administer the drug solutions using a volumetric pump through an intravenous line containing a sterile non-pyrogenic, low protein binding in-line filter (pore size of 0.2 micrometer to 1.2 micrometer)

When administered in combination, nivolumab should be given first

Patients should be monitored for infusion related reactions

Pre-medication
Nil

Emetogenicity
No routine antiemetics required

Additional supportive medication
Nil

Extravasation
Neutral

Investigations – pre first cycle

Investigation	Validity period
FBC	14 days
U+E (including creatinine and bicarbonate)	14 days

LFT (including AST)	14 days
Calcium	14 days
Serum samples for HIV, Hep C antibody and HBs Ag if risk factors	Baseline
Cortisol	Baseline
Luteinizing hormone	Baseline
Follicle stimulating hormone	Baseline
Testosterone	Baseline

Cautions

Presence of HIV, hepatitis B or C

Patients on high dose immunosuppression

Autoimmune disease: history of active inflammatory bowel disease, history of symptomatic autoimmune disease e.g. rheumatoid arthritis, SLE, autoimmune vasculitis, history of autoimmune neuropathy e.g. Guillain-Barre

Patients should be on the lowest clinically effective dose of systemic steroids

No dose adjustment is required for mild-moderate renal impairment. No data are available for severe renal impairment (GFR <30ml/min)

No data are available for liver impairment (bilirubin >1.5 ULN)

Investigations –pre subsequent cycles

FBC, U+E (including creatinine), LFT (including AST), TFTs every cycle for the first 4 doses, then routinely every other cycle or as per clinician instructions

Standard limits for administration to go ahead

If blood results not within range, authorisation to administer **must** be given by prescriber/ consultant.

Investigation	**Limit**
Neutrophil count	≥ 1.0 x 10^9/L
Platelet count	≥ 75 x 10^9/L
Creatinine clearance	≥ 30 mL/min
Bilirubin	≤ 1.5 x ULN
AST	< 2.5 x ULN if no liver mets, <5 x ULN if liver mets

Dose modifications

Dose de-escalation and/or escalation of nivolumab or ipilimumab is otherwise not allowed.

For information on treatment of Immune related side effects see:

https://www.healthierlsc.co.uk/canceralliance/chemotherapy-protocols/immunotherapy-toxicity-guidelines

Adverse effects –

for full details consult product literature/ reference texts

- **Serious side effects**

Immune reactions may occur during or after completion of treatment.
Infusion related reactions
Colitis
Hepatitis
Peripheral neuropathy
Hypopituitarism
Hypothyroidism
Uveitis
Renal failure
Cardiac events
Thromboembolism
Interstitial lung disease
Pneumonia, upper respiratory tract infection

- **Frequently occurring side effects**

Pruritus
Rash
Nausea and vomiting
Diarrhoea
Fatigue
Decreased appetite
Abdominal pain
Hypertension
Arthralgia

- **Other side effects**

Tumour pain
Headache, dizziness
Blurred vision
Raised transaminases

Significant drug interactions

– for full details consult product literature/ reference texts

Anticoagulants: increased risk of haemorrhage – avoid or closely monitor.

Corticosteroids: use of systemic corticosteroids at baseline, before starting ipilimumab and/or nivolumab, should be avoided because of their potential interference with the pharmacodynamic activity and efficacy of the agents. However, systemic corticosteroids or other immunosuppressants can be used after starting ipilimumab and/or nivolumab to treat immune-related adverse reactions.

Additional comments

Ipilimumab is contraindicated in patients with active, life-threatening autoimmune disease, or patients who are receiving immunosuppressive treatment following organ transplantation graft where immune activation is potentially imminently life threatening.

The prescriber must discuss the risks of nivolumab therapy with the patient and provide the Patient Alert Card.

Contraception: Adequate methods of contraception should be used during therapy and for 8 weeks after last dose.

Sodium: Ipilimumab and nivolumab concentrate each contain 0.1mmol (2.30mg) sodium per mL. Care if low sodium

diet.

References

Yervoy SPC - https://www.medicines.org.uk/emc/product/4683
Opdivo SPC - https://www.medicines.org.uk/emc/product/6888

THIS PROTOCOL HAS BEEN DIRECTED BY DR LAU, CONSULTANT ONCOLOGIST

RESPONSIBILITY FOR THIS PROTOCOL LIES WITH THE HEAD OF SERVICE

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