Bendamustine

A Viewpoint by Michael Herold

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Bendamustine hydrochloride was developed in the early 1960s. It is a nitrogen-mustard derivative from the group of alkylating agents, and may also act as an antimetabolite. Recently, apoptosis induction by bendamustine was demonstrated.

Bendamustine is used as a single agent as well as in combination with other cytotoxic drugs. Most experience with bendamustine is in non-Hodgkin's lymphomas (NHL) including chronic lymphocytic leukaemia (CLL) and multiple myeloma; furthermore, it is used in Hodgkin's lymphoma, metastatic breast cancer and small cell lung cancer.

At present, bendamustine is a typical agent for second-line treatment in the palliative setting of NHL, B cell CLL and Hodgkin's disease and even aggressive NHL. In relapsed and resistant NHL, objective response rates (OR) between 50 and 80% have been reported from small phase II studies for bendamustine alone or in combination. There is only 1 prospective randomised trial in the first-line treatment of advanced NHL comparing BOP (bendamustine/vincristine/prednisolone) versus COP (cyclophosphamide/vincristine/prednisolone): OR of about 70% including 20% complete responses (CR) were achieved in both groups, with no differences in survival at 20 months. In multiple myeloma stages II and III, bendamustine/prednisone (B/P) was tested versus melphalan/prednisone (M/P) in a phase III trial: ORs were about 70% in both groups, but CR was significantly higher in the group treated with B/P (32 *vs* 11%), resulting in an improved median time to progression (14 *vs* 10 months; $p < 0.03$).

The toxicity profile differs somewhat from that of other alkylating agents: there is almost no alopecia and only a low potential for nausea and vomiting but a relatively high number of allergic skin reactions. Myelosuppression is comparable with that with other alkylating agents such as cyclophosphamide, melphalan or chlorambucil.

In summary, bendamustine is an effective and well tolerated drug in the palliative treatment of NHL. Further studies are warranted to define its role in the first-line treatment of NHL, including multiple myeloma, as well as its efficacy in solid tumours. ▲