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## Background

Lung, breast, colon and head and neck cancers are among the most common cancers in Asian countries and contribute to significant overall cancer mortality. Due to a lack of regular screening programmes, most of these tumours are diagnosed at an advanced stage where conventional treatment modalities are less helpful. Immunotherapies including immune check point blockade (ICI) have shown promising results for managing these cancers. Cytotoxic T-lymphocyte antigen-4 (CTLA-4) and Programmed Death-1 (PD-1) are checkpoints that negatively regulate T-cell immune responses, and Ipilimumab, pembrolizumab, and nivolumab ICPI are inhibitors of these checkpoints that are approved by the Food and Drug Administration (FDA) for the treatment of advanced solid cancers. However, these drugs are associated with a variety of side effects mediated by immunological mechanisms.

## Methods

Patients with metastatic melanoma treated with ICIs were identified from a malignant melanoma database. Patients who underwent liver biopsies for suspected hepatitis due to ICI were identified and reviewed.



“My training at Queen Elizabeth Hospital, Birmingham has been nothing short of remarkable. It was like a dream come true for me. Through this project I have been able to gain knowledge in new stains for and other advanced immunohistochemical stains. I gained knowledge about the mechanism and histological features of hepatotoxicity by immune check point inhibitors

have on the liver. Very few places across the world offer the wide variety of cases that I have observed.”



## Further training in India

“With the start of new trials in various hospitals in India for the PDL1 inhibitor and with anti-CTLA4 in metastatic HCC, our enhanced knowledge on hepatotoxicity of these drugs can be taken further.

With a better understanding of the mechanism of hepatotoxicity associated with immunotherapeutic drugs, improved therapeutic guidelines can be proposed for patient care in the future. The project will be useful for the management of cases with advance cancers on immunotherapy which is going to be started at our and other Indian centers.

The experience gained has been very useful for hepatopathology cases aiding early diagnosis of liver diseases.”