



**Fig. 1** Dose distribution of whole ventricular radiotherapy using Intensity modulated proton therapy.

characteristics results in delivering low entry dose and deposit the majority of their energy at the end of their path, yielding a typical dose energy peak called ‘Bragg peak.’ This steep fall-off allows for the delivery of high radiation doses to the tumor and sparing of tissue beyond the tumor. All our patients underwent PT as a part of curative management and tolerated the treatment well. One patient treated with CSI had grade III neutropenia managed conservatively, whereas others did not experience more than grade II toxicities. Mean dose to hippocampus for all our patients was less than 30 Gy, below the accepted threshold for intelligence quotient preservation [6]. All patients could resume their normal schooling after the treatment, with no impact so far in their educational activities, and maintained quality of life. However, neurocognitive assessments were not available for two out of the three patients, and could not be planned due to the logistic challenges because of the ongoing COVID-19 pandemic.

## Acute Meningoencephalitis in a Child Secondary to SARS-CoV-2 Virus

We report a case of cerebrospinal fluid (CSF)-proven severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) in a child with acute meningoencephalitis.

An 11-year-old boy presented with one day history of fever, headache, vomiting and altered sensorium. There was no history of cough, fast breathing, rash or abdominal pain. On examination he was hemodynamically stable with a Glasgow coma scale (GCS) of 9 (E3 V2 M4). There was no cranial nerve paresis and he had signs of meningeal irritation (neck stiffness and positive Kernig’s sign). In motor functions, he had increased tone with brisk reflexes and extensor planters in both lower

We have successfully implemented PT in the treatment of ICGCT in India. PT should be considered as a treatment option for optimal management of these curable tumors. Further follow up is required to assess the long-term sequelae of treatment in these patients.

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limbs. Fundus examination was normal. Child was managed in pediatric intensive care unit as per the standard protocol for acute febrile encephalopathy with empirical broad-spectrum antibiotics and acyclovir along with other supportive care. Blood investigation showed severe lymphopenia (absolute lymphocyte counts 700/mm<sup>3</sup>) and raised inflammatory markers (C-reactive protein-18 mg/dL, lactate dehydrogenase-4000 U/L, ferritin-2400ng/ml, D-dimer-51091 ng/mL) with deranged liver functions. CSF examination showed pleocytosis (75 cells) with lymphocytic predominance (80%), very high protein (696mg/dL) and normal sugar levels. The RT-PCR test for SARS-CoV-2 was done on a nasopharyngeal swab and CSF because of the outbreak situation and was found to be positive in both. CSF was negative for other neurotropic viruses (herpes, varicella and enterovirus). A head contrast enhanced computed tomography (CECT) scan was normal.

Child was managed conservatively and was given pulse dose methyl prednisolone (30 mg/kg/day) for 3 days followed by tapering doses, in view of high inflammatory markers and no evidence of bacterial infection. Antibiotics and acyclovir were stopped after the confirmed diagnosis of SARS-CoV-2 induced meningoencephalitis on day 4 of illness. Injection remdesivir was not given as a unit protocol as growing evidence did not find it beneficial to prevent mortality in SARS-CoV-2 positive patients and there is not much data of its use in children. Child's sensorium gradually improved in next few days along with downward trend in inflammatory markers. His repeat RNA-PCR for SARS-CoV-2 on nasopharyngeal swab was again positive on day 7 of illness and second CSF examination for the same was refused by the parents. In view of clinical improvement, he was subsequently discharged on request on day 10 of illness as per the government's discharge policy with strict home isolation advice. Subsequent RNA-PCR for SARS-CoV-2 on nasopharyngeal swab became negative on day 15 of illness. Child is in close follow up and is doing well so far.

Most coronaviruses (CoVs) share a similar viral structure and infection pathway, therefore the neurotropic mechanisms previously found for other CoVs may also be applicable for SARS-CoV-2 [1-3]. It is associated with a wide spectrum of neurological manifestations, including encephalopathy, Guillain-Barré syndrome (GBS), and perfusion abnormalities in the brain [put Indian GBS, and encephalitis ref]. However, attempts to detect the virus in the CSF of patients with neurological manifestations have not been widely reported. Only two cases in adults around the world has been reported so far out of which one showed the virus using gene sequencing of the CSF and the other one showed RT-PCR positive in CSF (similar to our case), suggesting that the virus has the potential to cross the blood brain barrier [3,4]. The SARS-CoV-2 receptor for cell entry i.e., membrane-bound angiotensin converting enzyme 2 (ACE2) which is also expressed in neurons, as well as endothelial and arterial smooth muscle cells in the brain potentially allowing

SARS-CoV-2 to cross the blood-brain barrier and cause viral meningitis [5]. Panciani, et al. [6] hypothesized a three-step model to explain the neuroinvasive potential of SARS-CoV-2, suggesting that the viral load in CSF progressively increases and it triggers an inflammatory response, but the viral clearance precede the occurrence of indirect SARS-CoV-2 effects on the CNS [6].

This case highlights the neurotropism of SARS-CoV-2 virus, and that meningoencephalitis may be the initial presentation of SARS-CoV-2 even without respiratory symptoms. We feel early use of immunosuppressants like methylprednisolone, especially in the setting of hyperinflammatory syndrome, is crucial for better outcome.

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## Hepatic Visceral Larva Migrans Causing Hepatic Artery Pseudo-Aneurysm

Visceral Larva Migrans refers to migration of second stage nematode larvae through human viscera most commonly the liver and lungs. This entity usually presents with fever, abdominal pain, hepatomegaly and respiratory symptoms. Here we describe hepatic visceral larva migrans causing hepatic artery pseudoaneurysm and presenting with upper gastrointestinal bleeding and its management.

Parasitic infections of liver are commonly encountered in clinical practice and can have myriad presentations posing a clinical diagnostic challenge. Hepatic visceral larva migrans (VLM) is one such entity presenting with prolonged fever and

liver involvement especially in areas endemic for the parasite. Hepatic artery pseudoaneurysm is a complication described mostly with traumatic liver injury and post-surgery [1]. We describe this complication secondary to hepatic VLM and its successful management.

A 12-year-old girl presented with high grade fever, jaundice and right upper abdominal pain with progressive abdominal distension associated with weight loss for four months and a history of recurrent black tarry stools requiring blood transfusions. She was resident of a rural area and her family of seven lived in an overcrowded house, belonged to lower socioeconomic status with poor hygiene practices, consumed vegetarian diet and had exposure to pet animals in neighborhood. On examination she was underweight (BMI 12.5 kg/m<sup>2</sup>), febrile and tachypneic, had severe pallor with pedal edema and no skin lesions. Systemic examination revealed firm tender