Cerebrovascular Pathology Following Proton Radiotherapy for Pediatric Cranial Tumors

Photon radiation therapy is an established adjunct in the treatment of pediatric cranial tumors and has recently seen an increase in its usage in these patients. This is mainly due to the radiation characteristics of protons where most of the energy from the proton is discharged at predictable and consistent distances, allowing for less collateral damage to the tissues deep to the radiation target. In addition to tumor control, however, radiation adversely affects cerebral vasculature and can result in progressive arterial stenosis (moyamoya syndrome) as well as development of vascular malformations (cavernous malformations).

The long term goals of this study are to study pediatric patients who have undergone proton RT for cranial tumors who have developed cerebral vasculopathy and to identify any patient or disease characteristics that put the patient at risk for the development of cerebral cavernous malformations or moyamoya syndrome. We would also like to identify any treatment related factors that predisposes the subject to develop cerebral vasculopathy and to examine the course of treatment and outcomes of cerebral vascular pathology following proton RT.

The medical student’s role would be chart review, data collection and data analysis.