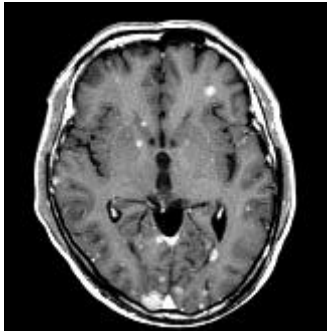


Brain Metastases (BM)

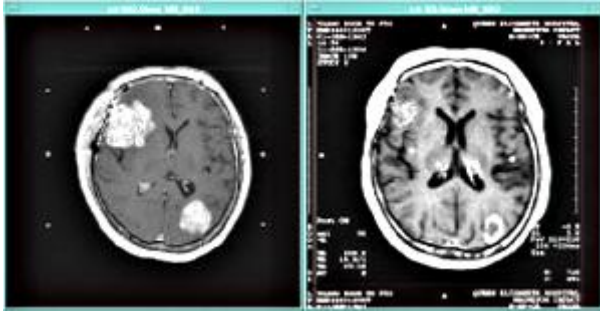
Brain metastases are the commonest brain tumours after middle age. The lung, breast, colon and kidney constitute the majority of primary cancers. BM used to be diagnosed only when they are large enough to cause symptoms. MRI increases the pick up rate dramatically

(Figure 1).

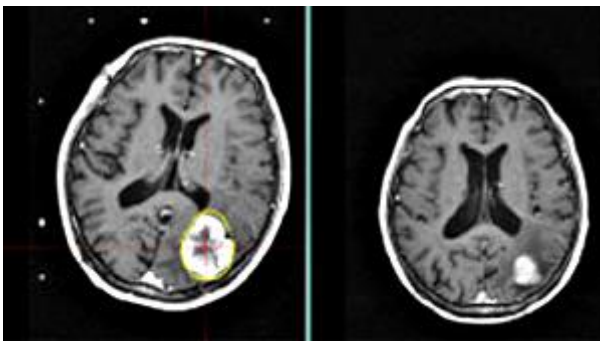


Many BM are diagnosed when they are as small as 1mm in diameter. The mean survival of patients diagnosed with symptomatic BM but not receiving treatment is less than 2 months. Whole brain irradiation improves the survival to 4 months, but may not be effective for radio-resistant or large lesions. For solitary BM with significant mass effect, open surgery plus post-operative radiotherapy (RT) is the most effective therapy with survival up to 12 months. Successful surgery has the advantage of quick relief of neurological deficits, and the diagnosis is confirmed by histology. The latter is valuable in patients with no obvious primary tumour. Yet, not many patients with BM are candidates for open surgery. Patients with poor general health, multiple lesions and deep seated lesions which cannot benefit from surgery or RT suffer tremendously during the final weeks of their life.

In the past decade, the up rise of radiosurgery adds a highly effective palliative tool for patients with BM. In the early days, the Gamma Knife radiosurgery accepted only patients with small BM (less than 3 cm), less than 4 lesions per patients, and those with a stable primary. For such a selected group, good quality survival compares favourably with that of open surgery. Now the indications have widened: recent evidence suggests that the Gamma Knife can achieve excellent palliation even in patients with numerous BM (more than 4) (Figure 2),



and large BM (> 3cm) (Figure3),



and patients with active extracranial disease. BM at basal ganglia, brain stem and other eloquent areas of the brain are not contraindications. In fact, Gamma Knife excels where open surgery is risky and impossible. Being non-invasive and usually finished in a single session, patients with poor performance score tolerate the procedure well. In addition, the therapeutic effect of Gamma Knife for BM is much faster than benign lesions such as schwannomas or AVMs. Most patients' neurological deficits improve within days of treatment. About 5% of patients experience symptoms of tumour necrosis 6 months later. Pulsed steroid therapy usually abolishes the symptoms.

The value of post-radiosurgery whole brain irradiation (WBR) is controversial. Existing evidence suggests that WBR improves the rate of local control. Yet, it does not add survival benefit. Patients surviving longer than 12 months may experience radiation induced dementia. Randomised controlled trials are now underway to shed more light on such controversy.

In treating BM, every physician has a different philosophy. Most would agree that there is no cure. Good quality survival more than 6 months is worthwhile. Any procedural related morbidity digs deep into survival benefits. About 10% of patients survived much longer than the median presumably due to a favourable host-cancer relationship. The physician must develop the art of reason and compassion in advising treatment. Hope and support are essential for the psychological well being of these patients.

