PALLIATIVE TREATMENT OF ADVANCED SUBEPENDYMAL OLIGODENDROGLIOMA WITH RADIOTHERAPY AND THAI HERBAL MEDICINE AS SUPPORTIVE REMEDY

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ABSTRACT

OBJECTIVE: To evaluate the supportive effect of Thai herbal medicine, Vilac Plus complementarity to standard palliative radiotherapy in comparison with historic control from the literature reports in subependymal oligodendrogliomas.

METHOD: An inoperable subependymal oligodendroglioma in a 14 years old boy being treated by palliative radiotherapy and concurrent with Thai herbal medicine (Vilac Plus) as supportive remedy.

RESULT: The result revealed complete response of advanced subependymal oligodendroglioma. The patient shows good quality of life until now, 43 months after the diagnosis and starting the treatment. In addition, there is also improvement of diabetes insipidus and still alive with Karnofsky's performance status 100%. Currently the follow-up time is 43 months after the initial diagnosis and treatment (craniotomy and tumor biopsy).

CONCLUSION: The results of radiotherapy of an inoperable subependymal oligodendroglioma using Thai herbal medicine as an adjuvant remedy has been very satisfactory with good quality of life. This combination modality of treatment present a very promising and cost effectiveness therapy, leading to the confirmation of the concept of complementary approaches on cancer therapy.

Key word: Subependymal oligodendrogliomas, palliative radiotherapy, Thai herbal medicine

INTRODUCTION

Subependymal oligodendrogliomas are rare with the character of slow-growing intracranial neoplasms of the subependymal matrix.[1-4] The standard treatments are surgery. But being intraventricular tumors, they are a major challenge for neurosurgeon because of their depth and important adjacent structures. Moreover the operative risks such as visual field defect, postoperative thalamic hemorrage,

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pulmonary emboli, subdural hygroma and neurological deficit have been reported.[1-4] Therefore, in advanced cases, palliative radiotherapy alone is the available method of treatment with not fully satisfactory results due to tumor mass effect or tumor plus peritumoral edema causing increased intracranial pressure. The severe brain edema may produce sudden brain herniation. We are reporting a case with inoperable subependymal oligodendroglioma treated by palliative radiotherapy and the Thai herbal medicine (Vilac Plus) as supportive remedy. The tonic product was proven to have no acute oral toxicity in animal study.[5] No traces of prednisolone and dexametasone were detected.[6] An In Vitro study, the Vilac Plus presents an important antioxidant capacity.[7] The recipe of the ingredients of the Thai herbal tonic solution consisting of three edible herbs, the whole part of mushroom namely Ganoderma Lucidum, Houttuynia Cordata Thunb (leaves) and the roots of Boesenbergia Pandurata Holtt (Kra chai) had been found to be effective anti-tumor promoting activities.[8] The procedure of this project has been approved by the Committee of Khon Kaen University Human Ethics (HE 480745).

OBJECTIVE

To evaluate the supportive effect of Thai herbal medicine namely Vilac Plus adjuvant to standard palliative radiotherapy in comparison with historic control from the literature reports in subependymal oligodendrogliomas. This study has been performed at Radiotherapy Division, Department of Radiology, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand 40002.

CASE REPORT

A Thai boy 14 years old presented with history of polydipsia, polyurea, behavioral changes for 4-5 months. The computed tomography brain scans revealed subependymal tumor and dilatation of the whole ventricle. The patient had been treated by craniotomy and tumor biopsy. The pathological examination showed to be oligodendroglioma as shown in Figures 1A-1C. The suffering symptoms and complaints of the patient were severe headaches, nausea, vomiting, blurred vision, weakness of all extremities for 1 month and became semiconcious when admitted. These symptoms were due to severe brain edema and increased intracranial pressure from advanced progressive tumor. Computed tomography brain scans found progressive subependymal tumor with dilatation of the whole ventricles as shown in Figures 1D-1G.

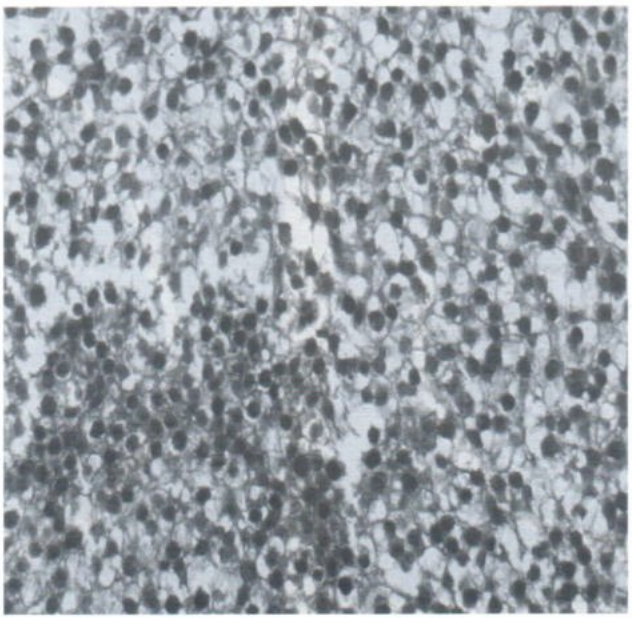

Fig.1A (x200) Oligodendroglioma, the tumor composed of uniform round cell with scanty vascular septa.

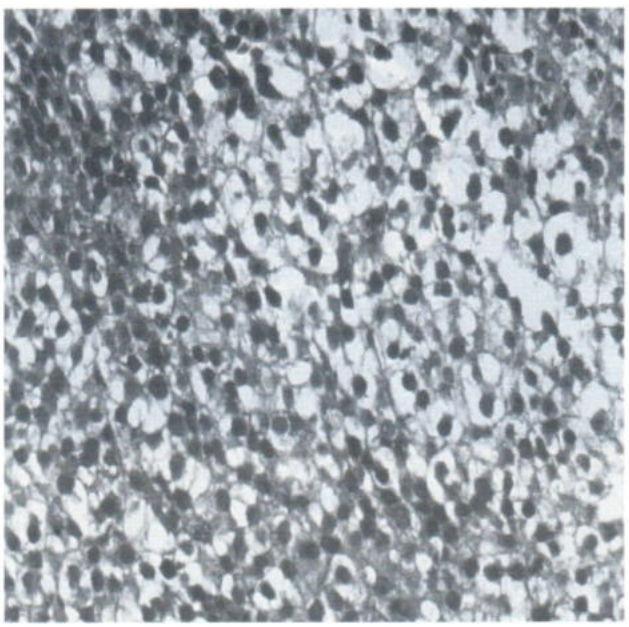

Fig.1B (x200) Oligodendroglioma, the cytoplasm was moderate and clear.

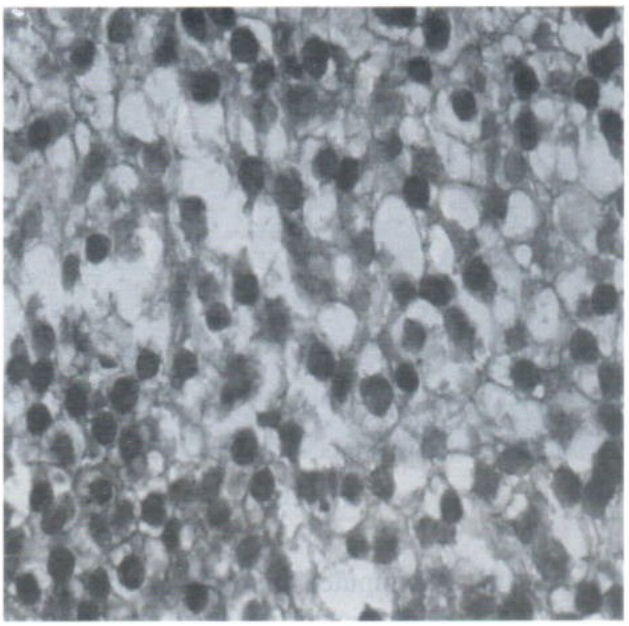

Fig.1C (x400) Oligodendroglioma, the nuclei were round and uniform. The nuclear chromatin was rather delicate.

Fig.1A-1C Microscopic pictures, Brain, right lateral ventricle: Oligodendroglioma.

Fig.1D

Fig.1E

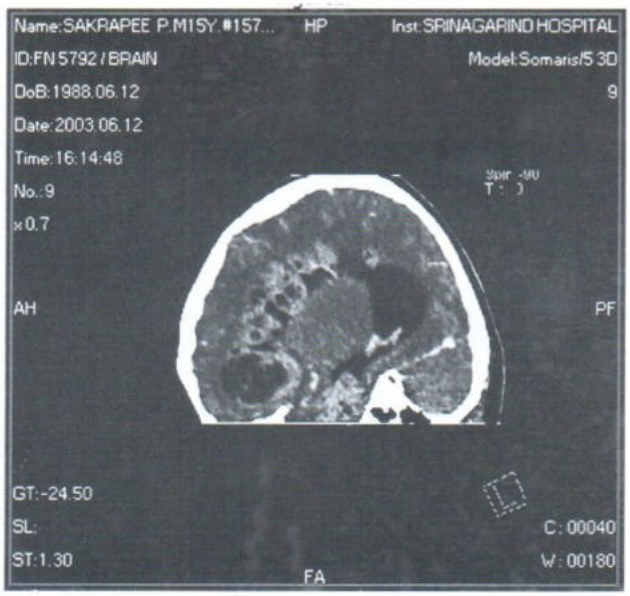

Fig.1F

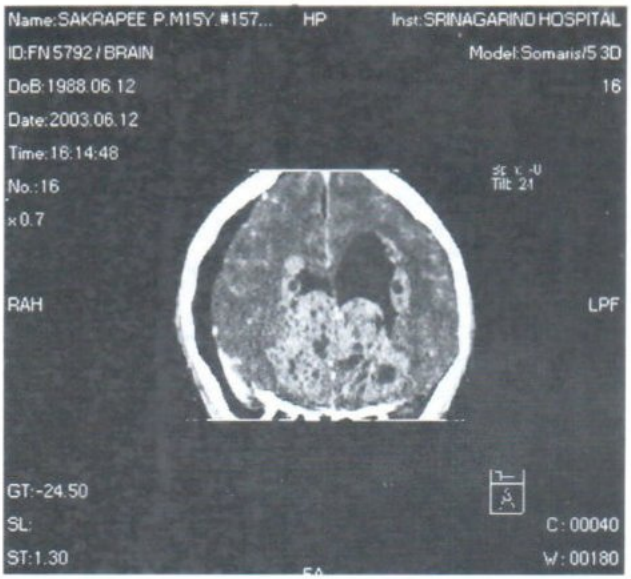

Fig.1G

Fig.1D -1G Computed tomography brain scans found to have progressive subependymal tumors with dilatation of the lateral ventricles in both sides of hemisphere before treatment.

TREATMENT

1. Steroid intravenous therapy to reduce brain edema before radiotherapy.
2. Whole brain irradiation 2850 cGy in 9 weeks (titration dose) with the Thai herbal tonic **Vilac Plus**, dose 15 cc, tid, pc, orally.
3. VP-shunt to relief the symptoms of severe hydrocephalus after a tumor dose of 575 cGy in 4 weeks, titration doses.

RADIOTHERAPY TECHNIQUE

The target volume is the whole brain and meninges. The prescribed dose is 30 Gy in 3-3.5 weeks by titration doses according to the patient was having a severe brain edema and the VP-shunting can not be performed before radiotherapy. The radiation technique used in this patient were two parallel opposing fields.

The result of treatment in this case showed much improvement. The patient can walk, right after treatment and can be able to communicate with other people. The computed tomography brain scans revealed severe hydrocephalus with no evidence of tumour left in ventricles as shown in Figures 1H- 1I. (tumor dose 575 cGy in 4 weeks) and after follow up computed tomography brain scans as shown in Figures 1J-1M revealed no evidence of tumor left in ventricles after treatment (tumor dose 2850 cGy in 9 weeks). Delayed time of radiation treatment was due to the problem of diarrhea, hypokalemia, hypernatremia, E-colisep-ticemia, poor general condition and the technical and mechanical problems of cobalt-60 unit machine. Follow up computed tomography brain scans revealed hypodense non enhancing soft tissue mass at wall of left lateral ventricle closely to the tip of ventriculostomy which was representing the non functioning of VP-shunt from granulation tissue without residual tumor left in the ventricles as shown in Figures 1N-1W. After performing VP-shunt revision, the granulation tissue had been found at the tip of VP-shunt confirmed by microscopic picture of tissue from tip of VP-shunt that revealed granulation tissue associated with the chronic inflammation as shown in figures 1X-1Z. Another work up on cerebrospinal fluid cytology revealed no malignancy cell and MRI whole spines revealed neither extra or intradural mass lesion nor abnormal enhancement with normal signal of bone marrow of the whole spines.

Computed tomography brain scans revealed no evidence of residual soft tissue tumor. The patient shows good quality of life until now, improving of diabetes insipidus and still alive with Karnofsky's performance status 100%, currently the follow-up time is 43 months after initial diagnosis (craniotomy and tumor biopsy).

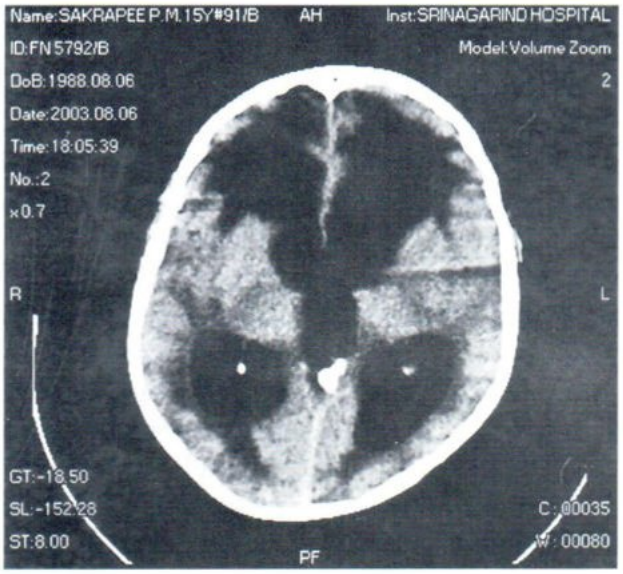

Fig.1H After radiation therapy with a dose of 2850 cGy in 9 weeks

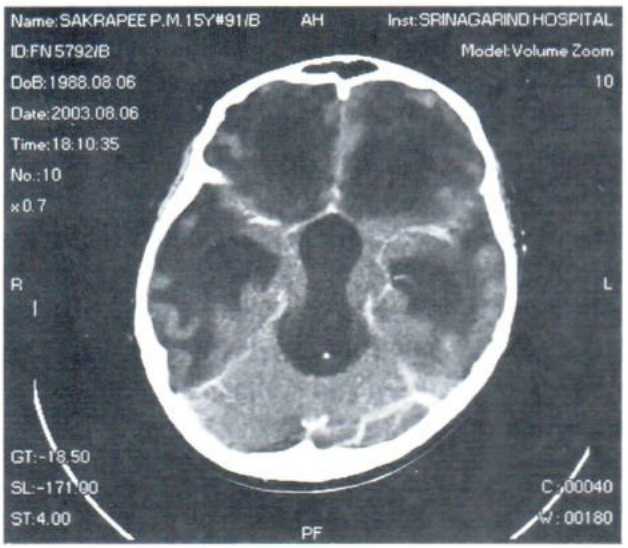

Fig.1I

Fig.1H -1I Computed tomography brain scans 4 weeks after treatment by radiation with a tumor doses of 575 cGys revealed severe hydrocephalus with no evidence of tumor left in the ventricles.

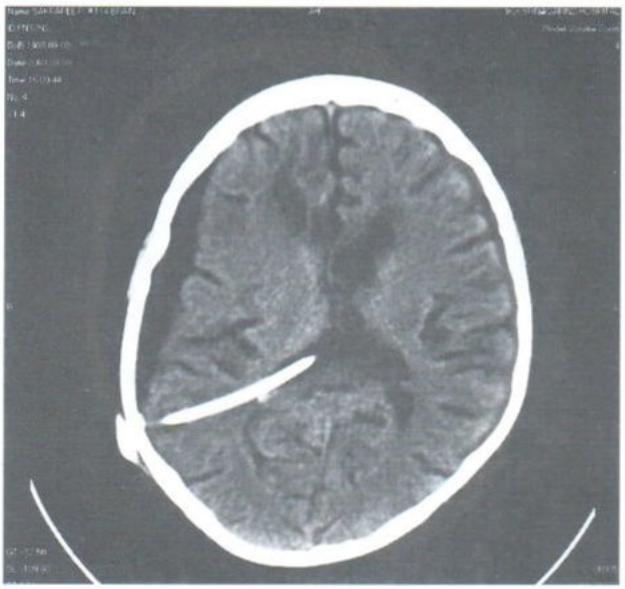

Fig.1J

Fig.1K

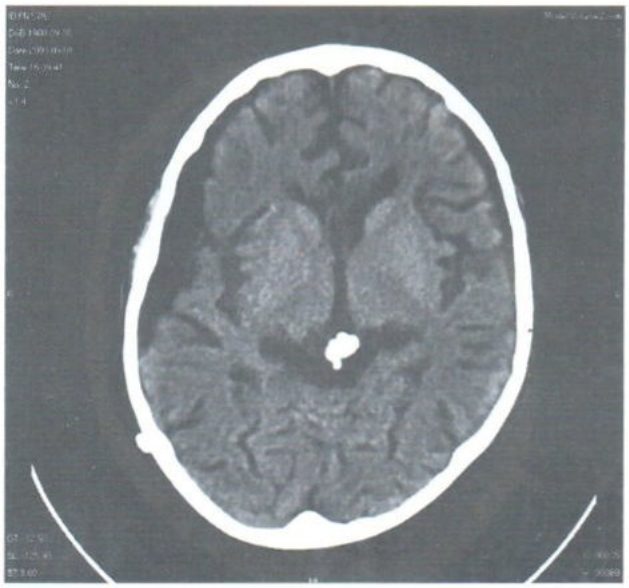

Fig.1L

Fig.1M

Fig.1J-M: Computed tomography brain scans revealed no evidence of tumor left in ventricles after treatment (tumor dose 2850 cGy in 9 weeks), with improvement of hydrocephalus in comparison with the CT taken 5 weeks before, after having a tumor dose of 575cGy in 4 weeks in Fig.1I and Fig.1K above.

Fig.1N

Fig.1O

Fig.1P

Fig.1Q

Fig.1N-1Q Further improvement after craniotomy, biopsy and radiation therapy, followed up 15 months after treatment.

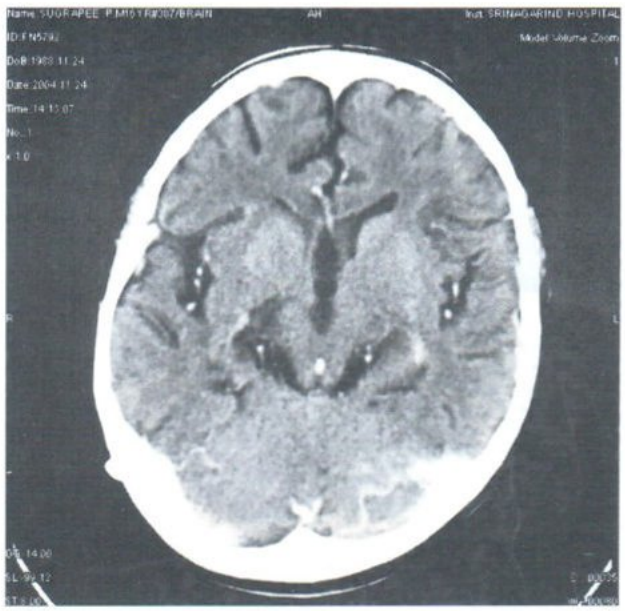

Fig.1R

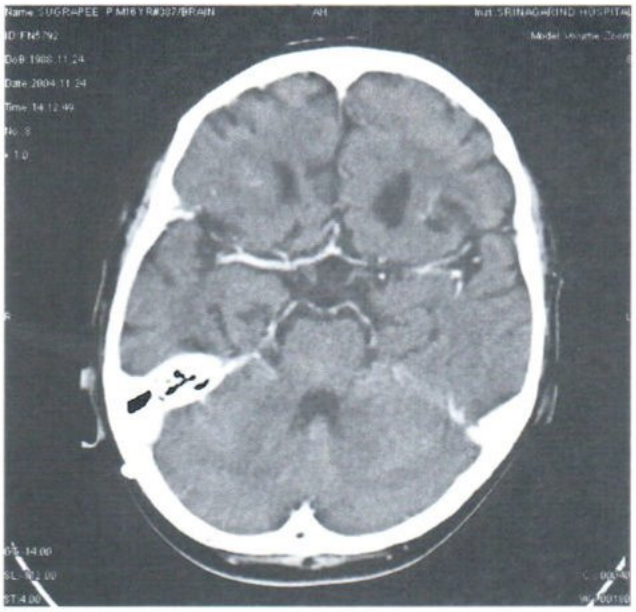

Fig.1S

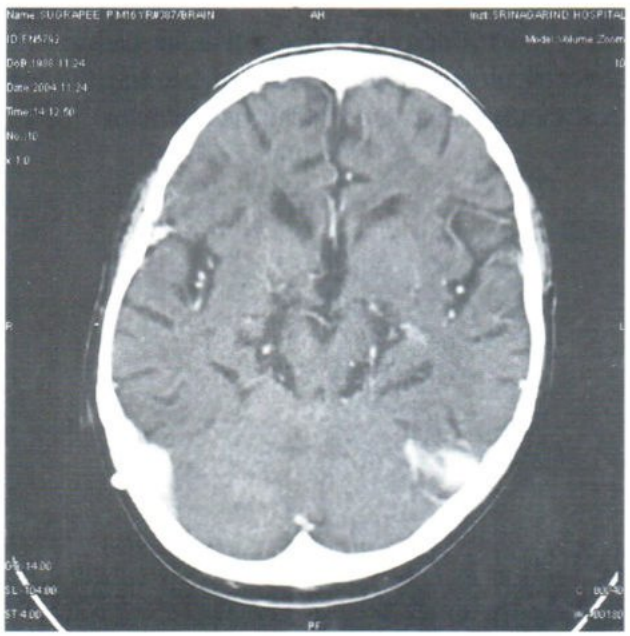

Fig.1T

Fig.1U

Fig.1R-1U Further improvement 15 months after having craniotomy, biopsy, and radiation therapy 2852 cGy in 9 weeks with "Vilac" supplementary and supportive therapy.

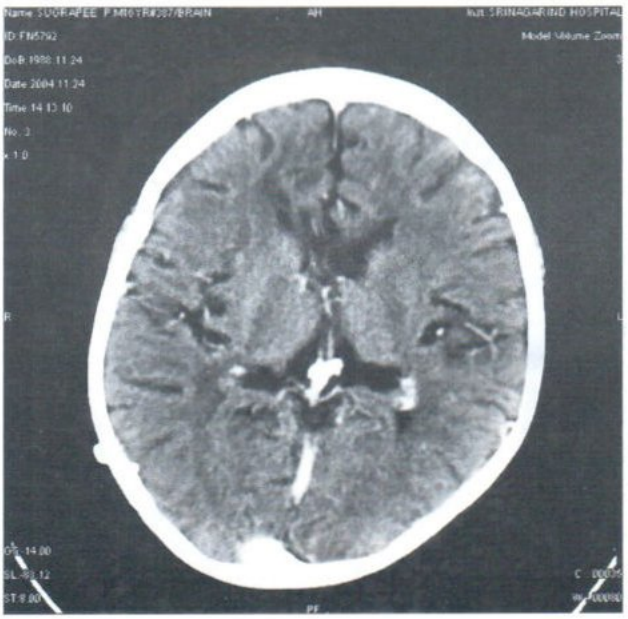

Fig.1V

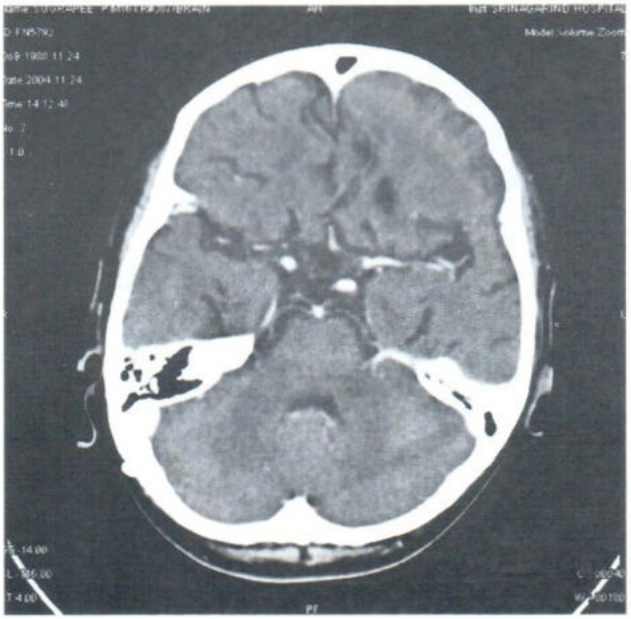

Fig.1W

Fig.1V-1W: Computed tomography brain scans revealed hypodense non enhancing soft tissue mass at wall of left lateral ventricle closely to the tip of ventriculostomy which was representing the non function of VP-shunt from granulation tissue without residual tumor left in the ventricles.

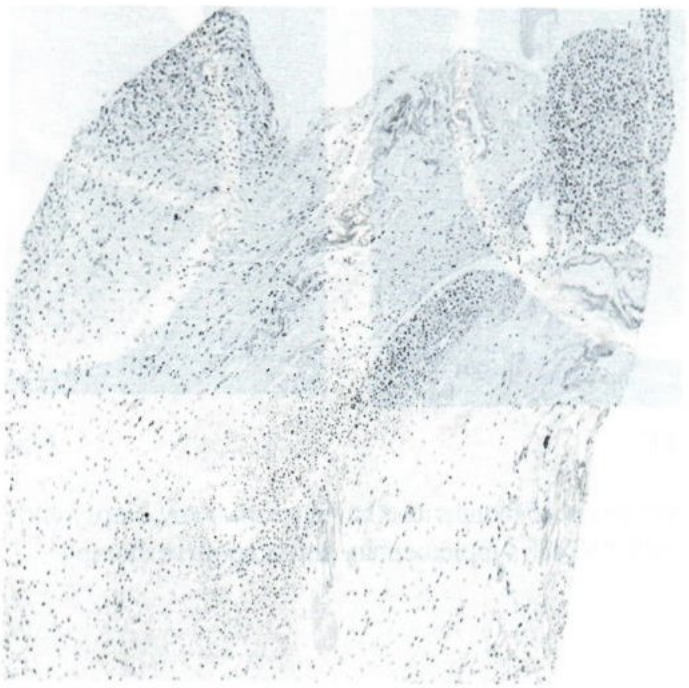

Fig.1X (x40)

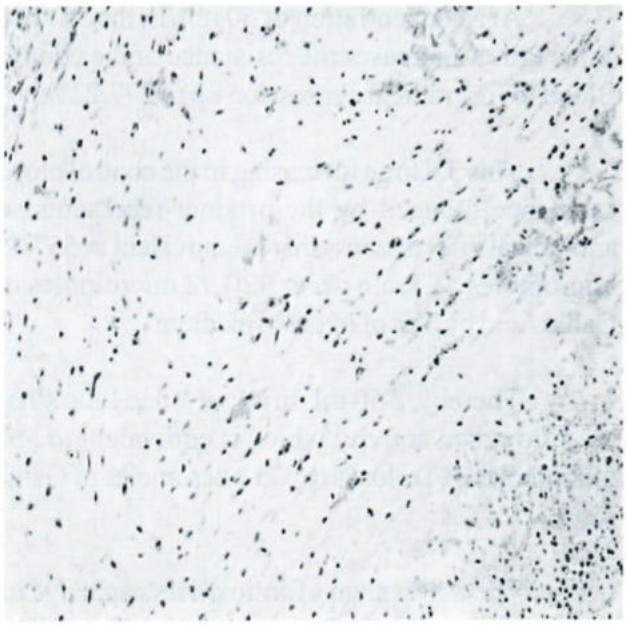

Fig.1Y (x100)

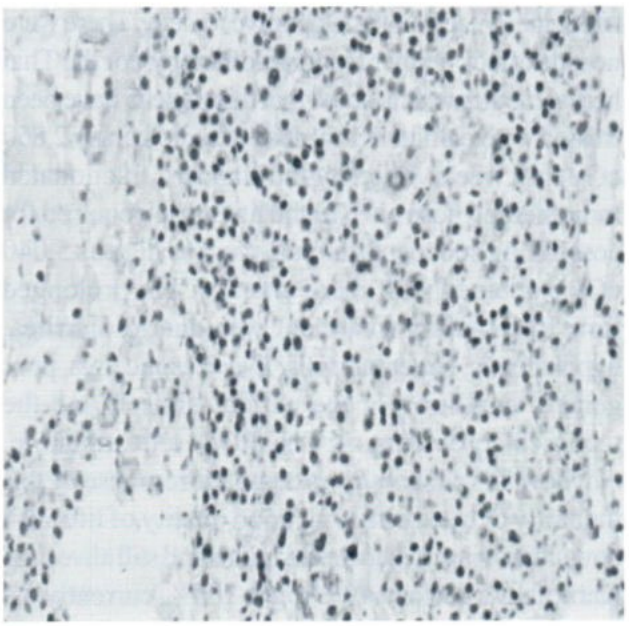

Fig.1Z (x200)

Fig.1 X, Y, Z Microscopic pictures of tissue from tip of VP-shunt revealed granulation tissue associated with chronic inflammation.

RESULT

The result revealed complete response of advanced subependymal oligodendroglioma. The patient shows good quality of life until now, 43 months after treatment, in addition to improving of diabetes insipidus and still alive with Karnofsky's performance status 100%, currently the follow- up time is 43 months after initial diagnosis (craniotomy and tumor biopsy).

DISCUSSION

Classically, oligodendroglioma are slow -growing brain tumor and have a long natural history with a median survival of over five years following the onset of symptoms. The frontal lobes are the most frequently involved region and abnormal calcifications may be seen on skull radiographs.[9] The standard treatments are surgery. The role of post-operative radiotherapy in these gliomas is not clear. Nevertheless, the limited available data suggest that post-operative radiotherapy improves five year survival of these patients. Five- year survival rates following surgery alone range from 23-82% and surgery with radiotherapy[9] range 53-100 %. Subependymal oligodendrogliomas are a major challenge for neurosurgeon because of their depth and important adjacent structures. Moreover the operative risks such as visual field defect, postoperative thalamic hemorrage, pulmonary emboli, subdural hygroma and neurological deficit have been reported[1-4] Long term results for subependymal oligodendroglioma depend on the size of surgical resection.[1-4] In advanced cases, palliative radiotherapy alone is the available method of treatment with not fully satisfactory results due to tumor plus peritumoral edema causing increased intracranial pressure. The severe brain edema may produce sudden brain herniation. We are continue our study that has been reported[10] with inoperable subependymal oligodendroglioma treated by palliative radiotherapy and the Thai herbal

medicine (Vilac Plus) as supportive remedy. There were no side effect neither from radiotherapy nor the Thai herbal medicine. It is noted that this patient have been treated with palliative low dose of radiotherapy 2,850 cGy in 9 weeks whereby the standard fractionated radiotherapy dose cited in the literature[1] required for controlling subependymoma, were as high as 5,040 cGy combined with chemotherapy. The prolonged time of radiation treatment was due to diarrhea, hypokalemia, hypernatremia, ***E-coli*** septicemia, poor general condition of the patient himself and the technical problems of Cobalt-60 unit machine. Anyhow this patient shows complete response by this modality of treatment with good quality of life until now, improving of diabetes insipidus and still alive with Karnofsky's performance status 100%, currently the follow-up time is 43 months after initial diagnosis (craniotomy and tumor biopsy).

The accomplishment of herbal cancer therapy was reported by Battle TE. et al., Harvard Medical school U.S.A., on the successful of Chinese herbal extract in chronic lymphocytic leukemia with complete remission over 10 years without chemotherapy.[11] However from our study the authors are satisfied with the uses of Thai herbal tonic (Vilac Plus) in a combined mode of treatment simultaneously with radiation therapy in the hopeless advanced cancer cases.

The impressive synergistic effect of Vilac Plus the radiation therapy evidenced by the extended longer survival time particularly in this hopeless case of cancer. This tonic product must contribute a complementarily supportive effect through its powerful antioxidant effect[7] that the analysis report revealed the impressive results of antiradical potency of Vilac Plus®. This Vilac Plus® presents in vitro as an important antioxidant capacity, which increases with the dose of the product until a concentration of 50 mL per liter of the reaction medium.

® = Trolox, Vilac, Patented by Kirial lab SPIRAL-No. Patent FR 2.642.526

At a concentration of 50 mL/L, the drink of Vilac Plus® increases the resistance of the control Blood to free radical aggression up to 277.22%.

This 3.8 time increasing in the control blood resistance induced by the product represents an antiradical effectiveness that is equivalent to 557.45 micromoles of Trolox® or 320.92 micromoles of Gallic Acid by liter of reaction medium.

Thereby, a 50 mL drink of Vilac Plus® has an antioxidant activity which is equivalent to 557 micromoles of Trolox® or 321 micromoles of Gallic Acid.

The assessment of antioxidant capacity had been performed by Kirial Laboratories (Spiral Test Patent)

The mechanism of the antioxidants on enhancing the therapeutic effect of cancer can be explained by the biochemical aspect of the antioxidants[12, 13, 14] including Vilac Plus® contributing to potentiate radiotherapy effect can be explained by 3 mechanisms:

(1) Facilitating the pathway of concentration of retinoic acid and beta-carotene by acting on the carcinogenesis factors of the lung such as 4-(methyl-nitrosamino)-1-(3-pyridyl)-1-butanone in smoke-exposed (SM) lung cancer patients
(2) Inhibit extracellular signal for lung cancer cell proliferation and antigen production
(3) Blocking the regulation of protein synthesis of lung cancer

3 mechanisms will be the consequence of these evidences by reduction of the tumor size and space or lesion and eventually reduction the chance of distant metastasis of the tumor, where in this study, not only prolong survival time, but also no brain metastasis were noted in all cases.

CONCLUSION

The results of radiotherapy on inoperable subependymal oligodendroglioma using Thai herbal medicine as an adjuvant remedy is very satisfactory results with good quality of life. There were no side effects either from radiotherapy or the Thai herbal medicine. These combinations are very promising and cost effectiveness therapy leading to confirmation on the concept of complementary approaches for cancer management.

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