Nasopharyngeal Carcinoma Presented with Right Upper Limb Weakness: A Case Report

Zamzuri Z[a], Mohd Adham SY[a], Mohamad Saufi A[b], Azian AA[c], Mohamed Azril MA[a], Azlina AR[d]

[a]*Department of Orthopaedics, Traumatology & Rehabilitation, Kulliyyah of Medicine, International Islamic University Malaysia, Kuantan, Pahang, Malaysia*
[b]*Neurosurgical Division, Department of Surgery, Kulliyyah of Medicine, International Islamic University Malaysia, Kuantan, Pahang, Malaysia*
[c]*Department of Radiology, Kulliyyah of Medicine, International Islamic University Malaysia, Kuantan, Pahang, Malaysia*
[d]*Department of Pathology, Hospital Tengku Ampuan Afzan, Kuantan, Pahang, Malaysia*

ABSTRACT
Nasopharyngeal carcinoma (NPC) is a malignant neoplasm arising from the mucosal epithelium of the nasopharynx, mainly within the lateral nasopharyngeal recess or Fossa of Rosenmuller. Distant metastasis to the cervical spine is the least common site in the vertebral system. This is a case of a 37-year-old lady with stage IV C nasopharyngeal carcinoma with local extension to the cervical spine who presented with right upper limb weakness.

KEYWORDS: Nasopharyngeal carcinoma, metastases, spine, upper limb

INTRODUCTION

Nasopharyngeal carcinoma (NPC) is a malignant neoplasm arising from the mucosal epithelium of the nasopharynx, mainly within the lateral nasopharyngeal recess or Fossa of Rosenmuller. The worldwide incidence of NPC is low(< 1 per 100,000) but it is one of the commonest malignancies among South East Asian Chinese and ranks as the second most common cancer among men in Malaysia.[1,2] The most common presenting symptom is cervical lymphadenopathy, followed by nasal, aural and neurological symptoms from cranial nerve involvement. Distant metastases of nasopharyngeal carcinoma have been reported in the bones, lungs, liver, distant lymph nodes, brain and portal hepatis. The spine is the commonest site for bone metastases. The incidence of spinal metastases is likely to be increasing as is expected with increasingly older populations, longer life expectancy, and improvement in medical treatment.

CASE REPORT

A 37- year- old Chinese lady presented with weakness of the right upper limb for one-month. She had no history of trauma or exposure to tuberculosis. She had loss four kilograms of weight within a month. No history of tinnitus, reduced hearing or epistaxis complaint. The patient had unremarkable family and past medical history.

Cervical spine examination revealed paravertebral muscle spasm, moderate tenderness at the midcervical spine with a limited range of neck movement. There was a mass at right posterior triangle of the neck measuring 3 x 2 centimeters, smooth in surface, mobile, well defined margin and firm in consistency. There were no supraclavicular lymph nodes palpable. Neurological examination of the right upper limb revealed loss of shoulder abduction, reduced power of elbow flexion and extension to grade 2. The reflexes were normal except for hyporeflexia of the right bicep. Sensation was reduced from C4 to T2 dermatome. The neurological examination of the left upper limb and both lower limbs including the cranial nerves were normal. The abdominal and breast examinations were unremarkable. She had a normal gait.

Her hemoglobin level was 14.4 g/dl with normal white cell count. The erythrocyte sedimentation rate was 61 mm/hr, and the C-reactive protein was 26.5 mg/L .The chest radiograph was normal. Plain radiograph of the cervical spine showed collapse of the C5 vertebra. Magnetic resonance imaging (MRI) of the cervical spine (Figure 1 & 2) showed a mildly enhancing anterior and right paraspinal soft-tissue mass, which extended from the lower part of C4 to the upper part of C6 vertebral body measuring about 2.3 x 2.8 x 2.8 cm. There was an extension to the C5 vertebral body, right facet joint and C4/C5 disc space. The mass also extended into the spinal cavity, obliterating the thecal sac and compressing on the spinal cord. Another soft-tissue mass was observed on the right side at the level of lower

Corresponding author:
Dr Zamzuri Zakaria
Associate Professor,
Department of Orthopaedics, Traumatology & Rehabilitation,
Kulliyyah of Medicine,
International Islamic University Malaysia,
Jalan Hospital, 25150 Kuantan, Pahang, Malaysia
Tel: +60139906744
Fax: +6095144451
Email: zamdr@yahoo.co.uk

clivus to C1 measuring about 2.4 x 4.7 cm causing obliteration of the larynx (Figure 3). Fibreoptic nasopharyngoscopy examination has detected fullness at the right fossa of Rosenmuller, and a biopsy was taken from there. The histopathology result revealed undifferentiated non keratinizing nasopharyngeal carcinoma. The diagnosis of nasopharyngeal carcinoma with metastases to the cervical spine (T3N1M1-stage IV C) was made.

The main indication for surgery in this patient was the progressive neurological deficit with evidence of spinal instability. She underwent 360 degree fixation combining anterior and posterior approach to the cervical spine, corpectomy of the C5 with discectomy of the C4,C5 and C5,C6 vertebra; and anterior fusion from C4-C6 augmented with an anterior plate. Lateral mass screw fixation was done from C3 to C7 vertebra. It was a one stage procedure with eight-hour duration of surgery. The amount of blood loss was 1.2 liters. Intraoperative finding was destruction of C5 vertebra body and facet joints with vascular soft tissue mass along the right paraspinal region of C4 and C5 vertebral bodies. Posteriorly there was destruction of the right C5 facet joint with vascular mass over the right C5 lamina. Histopathology examination of the soft tissue was consistent with nasopharyngeal carcinoma (Figure 4).

LMM was referred to an oncology centre and was planned for a radical concurrent chemo-radiation. She underwent 35 cycles of radiotherapy and 7 cycles of chemotherapy with intravenous cisplastin. She responded well to the chemotherapy and radiotherapy. At follow-up six months post operatively, the right shoulder abduction improved to grade 4 and normal motor power for both elbow flexion and extension. There was no sensory improvement.

Figures

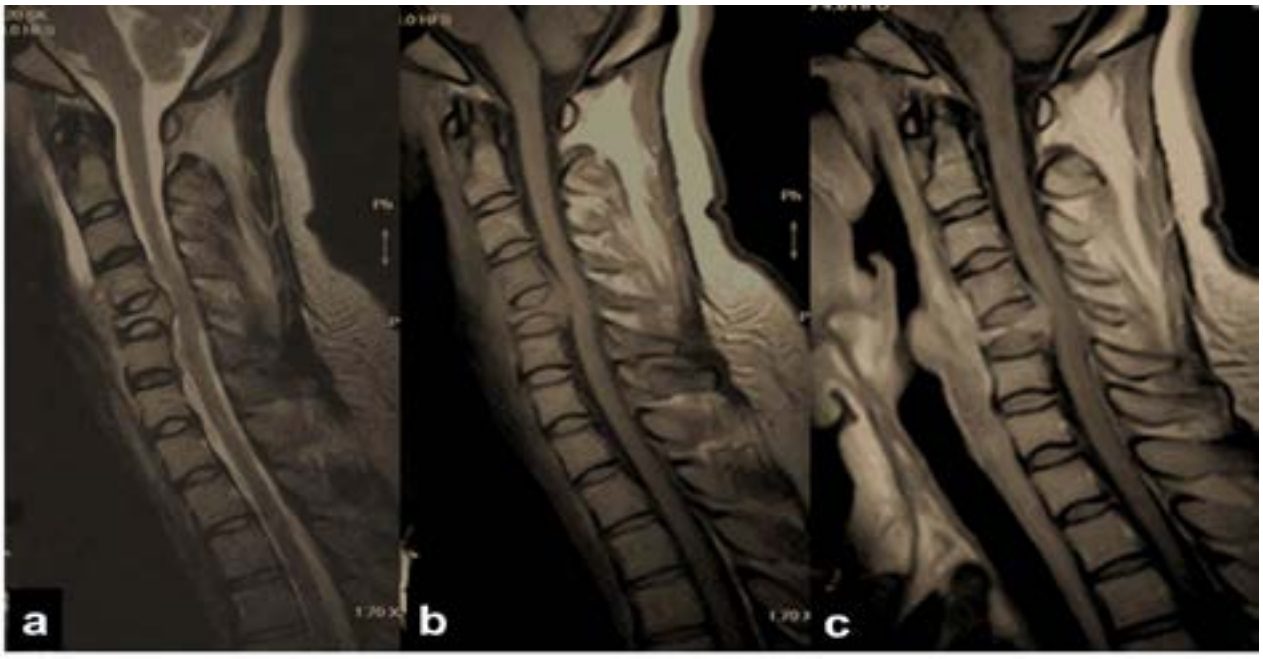

Figure 1: Sagittal MRI of Cervical spine – (a) T2, (b) T1, (c) Post IV Gad, demonstrating the collapsed C5 vertebra with obliteration of the anterior theca sac and compression onto the spinal cord by an enhancing soft tissue mass at that level

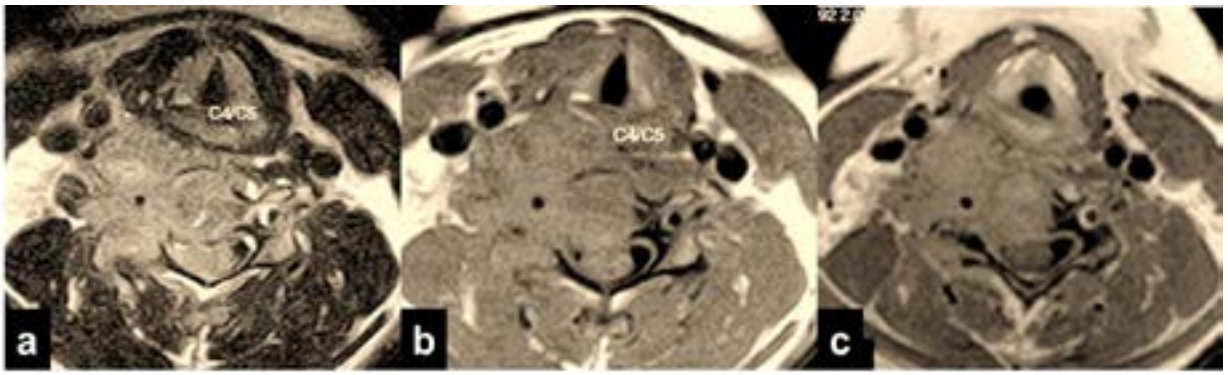

Figure 2: Axial MRI of Cervical spine – (a) T2, (b) T1, (c) Post IV Gad. A minimally enhancing soft tissue mass on the right side infiltrating the C5 vertebra and encasing the right neural foramen is shown. This mass extends into the spinal cavity obliterating the theca sac and compressing on the spinal cord.

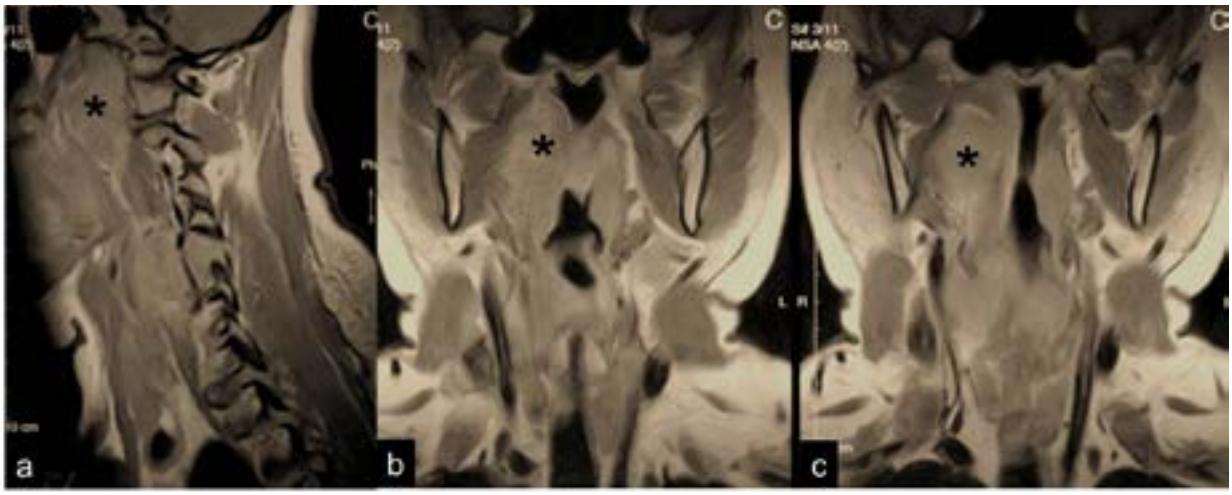

Figure 3: MRI of cervical spine post IV Gad. - (a) Sagittal, (b & c) Coronal, showing a minimally enhancing soft tissue mass at the right nasopharynx (asterisk) in keeping with the HPE proven nasopharyngeal carcinoma.

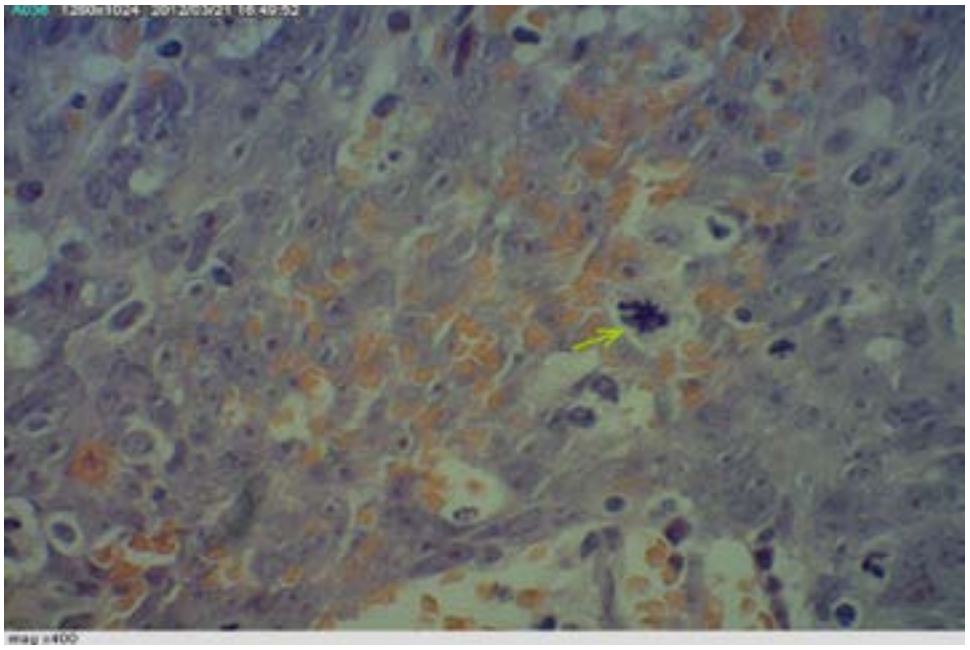

Figure 4: Individual tumour cells are in syncytial, consist of large, having oval nuclei, prominent eosinophilic nucleoli and frequent mitoses as shown by the arrow.

DISCUSSION

Our patient presented with right upper limb weakness due to local extension of the tumour toward the vertebral column and the spinal cord. As evidenced by the MRI findings, the tumour already involved the anterior, middle and the posterior column of the spine at presentation. It is very rare for NPC to present with solitary cervical metastasis. Even though the vertebral spine is a common site for skeletal metastases, only 3.5 percent of cases involved the cervical spine.[3] There are few common symptoms observed in NPC patients. Swelling of the lymph nodes in the neck is the initial presentation in many patients. Symptoms related to primary tumour, which include hearing loss, otitis media, trismus and cranial nerve palsies have also been reported. Larger growths may produce nasal obstruction or bleeding, and metastatic spread may result in bone pain or organ dysfunction. Staging of the NPC is mainly based on clinical and radiological examination. Our patient had a stage IV C disease which is considered as extensive neck disease with distant metastases.

The stage at presentation is the most significant prognostic factor. There are also other factors that may influence prognosis, which include the patient's age, gender, presence of keratinization, lymph nodes metastasis and genetic factor. Our patient had a poor prognosis as she presented with late-stage tumour (Stage IV C). The actuarial survival rate according to Ho's classification was reported to be 17.7 percent at 5 years and 9.5 percent at 10 years.[4] The surgical treatment for our patient was mainly palliative, due to her poor prognosis. The surgical strategy for spinal metastases as proposed by Tomita et al. was adopted in her case. They

proposed the indications for surgical intervention of metastatic spinal disease include: 1) intractable pain unresponsive to non-operative measures, 2) existence of a growing tumor that is resistant to radiation, chemotherapy or hormonal therapy, 3) spinal instability manifested as pathologic fracture, progressive deformity or neurologic deficit, and 4) clinically significant neural compression, especially by bone or bone debris.[5] The main indications for surgery in this patient were progressive neurological deficit, evidence of spinal instability with significant neural compression based on the clinical and radiological findings. Even though the surgical treatment was mainly palliative, the important reason of combining the anterior and posterior fixation was mainly due to the fact that the tumor had already involved the anterior, middle and posterior column of the spine which may progress into further instability if it is not well stabilized surgically.

NPC is highly radiosensitive and thus radiotherapy (RT) is the mainstay treatment. In stage IV disease, radiotherapy with or without adjuvant chemotherapy, has been established as the standard of care based on multiple prospective randomized trials,[6] as well as meta analyses which demonstrated a reduction of the risk of death by 18% and an increase in the 5-year overall survival of 4–6%.[7] It has been shown to provide significant improvements in both local control and distant metastases.

REFERENCES

1. Chan SH. Aetiology of nasopharyngeal carcinoma. Ann Acad Med Singapore 1990; 19:201-7.
2. Lim GCC, Halimah Y. Second report of the National Cancer Registry. Cancer Incidence in Malaysia 2003.Kuala Lumpur: National Cancer Registry, 2004.
3. Jonathan STS, Cheung YK, Chan D. Nasopharyngeal carcinoma: pattern of skeletal metastases. Br J Radiol 1990;63:202-5.
4. Teo PML, Leung SF, Yu P, et al. A comparison of Ho's, International Union against Cancer and American Joint Committee Stage Classification for nasopharyngeal carcinoma. Cancer 1983;52:362-8.
5. Tomita K, Kawahara N, Kobayashi T, et al. Surgical strategy for spinal metastases. Spine 2001;26:298-306.
6. Wee J, Tan EH, Tai BC, et al. Randomized trial of radiotherapy versus concurrent chemoradiotherapy followed by adjuvant chemotherapy in patients with American Joint Committee on Cancer/International Union against cancer stage III and IV nasopharyngeal cancer of the endemic variety. J Clin Oncol 2005;23:6730-8.
7. Wei WI, Kwong DL. Current management strategy of nasopharyngeal carcinoma. Clin Exp Otorhinolaryngol 2010;3:1-12.