Received: 16.12.2013 / **Accepted:** 18.01.2014
DOI: 10.5137/1019-5149.JTN.9708-13.0

Intracranial Dural Metastasis Presenting as Chronic Subdural Hematoma: A Case Report and Review of Literature

Kronik Subdural Hematom Olarak Ortaya Çıkan İntrakraniyal Dural Metastaz: Bir Olgu Sunumu ve Literatür Derlemesi

Kumar ASHISH[1], Kuntal DAS[1], Anant MEHROTRA[1], Awadhesh JAISWAL[1], Sushila JAISWAL[2], Rabi SAHU[1], Arun SRIVASTAV[1]

[1]Sanjay Gandhi Postgraduate Institute of Medical Sciences, Department of Neurosurgery, Lucknow, Uttar Pradesh, India
[2]Sanjay Gandhi Postgraduate Institute of Medical Sciences, Department of Pathology, Lucknow, Uttar Pradesh, India

Corresponding Author: Awadhesh JAISWAL / E-mail: jaiswal_dr_2002@yahoo.co.in

ABSTRACT

Intracranial dural metastasis presenting as chronic subdural hematoma is a relatively rare clinical scenario. There are different theories explaining the formation of subdural hematoma in such cases. In this report we present a case of chronic subdural hematoma in a 44-year-old lady who did not have any clinical evidence of primary tumour anywhere in the body. This lady died in spite of two emergency surgeries. During second surgery, the subdural membrane was sent for histopathological examination which revealed presence of metastatic tumour. We discuss the case along with a review of literature and recommend subdural membrane biopsy in all cases of chronic subdural hematoma.

KEYWORDS: Dural metastasis, Chronic SDH, Burr hole, Craniotomy, Histopathology

ÖZ

Kronik subdural hematom olarak ortaya çıkan intrakraniyal dural metastaz nispeten nadir bir klinik senaryodur. Bu gibi olgularda subdural hematom oluşumunu açıklayan çeşitli teoriler vardır. Bu raporda, vücudunda başka bir yerde klinik olarak primer tümör bulgusu olmayan 44 yaşında bir kadında kronik subdural hematom olgusu sunuyoruz. Hastamız iki acil cerrahiye rağmen kaybedildi. İkinci cerrahi sırasında subdural membran histopatolojik inceleme için gönderildi ve metastatik tümör saptandı. Bu olguyu literatür derlemesiyle birlikte tartışıyor ve tüm kronik subdural hematom olgularında subdural membran biyopsisi öneriyoruz.

ANAHTAR SÖZCÜKLER: Dural metastaz, Kronik SDH, Burr deliği, Kraniyotomi, Histopatoloji

INTRODUCTION

Although chronic subdural hematoma (SDH) following trivial trauma is very common in clinical practice, chronic SDH occurring in the background of intracranial dural metastasis is very rare (1). Such hematomas occur from a variety of cause and these patients have poor prognosis compared to other cases of chronic SDH. In this report the authors present a case of chronic subdural hematoma in a 44-year-old lady who did not have any clinical evidence of primary tumour anywhere in the body. The subdural membrane biopsy revealed metastatic deposits. Herein the authors discuss the case along with a review of literature and recommend subdural membrane biopsy in all cases of chronic subdural hematoma.

CASE REPORT

A 44-year-old hypertensive lady presented in our emergency department with holocranial headache associated with recurrent episodes of vomiting and decreasing level of sensorium of 15 days duration. There was no accompanying history of fall or any other form of trauma. There were no other associated co-morbidities like diabetes and she was not on any antiplatelet or antithrombotic medications. There was no history suggestive of any malignancy anywhere in the body. When she presented to us, she was unconscious. She was having flexion response in her upper limbs on central pain stimulus. The right sided pupil was dilated and sluggishly reacting. An urgent CT head (plain) was done which revealed a hypodense crescent shaped extra axial lesion overlying the right fronto-temporo-parietal convexity with midline shift of 1.5 cm towards the left, which immediately suggested the diagnosis of chronic subdural hematoma (Figure 1). She was urgently taken up for burr hole and evacuation of the hematoma. During surgery around 100 ml of motor oil like fluid was evacuated after which brain expansion was noted upto the surface and brain was pulsating well. Post operatively, however, the patient did not show any improvement. CT head was therefore repeated and showed acute subdural hematoma with persisting mass effect (Figure 2). She was re-operated and the hematoma was evacuated through a craniotomy. During

the re-exploration, the subdural membrane was found to be greenish in color with areas of thickening. It was excised and sent for histopathological examination. Unfortunately, even after re-surgery the patient failed to show any improvement in spite of complete evacuation of hematoma on CT scan of head (Figure 3). Her condition progressively deteriorated and she finally succumbed to death on the 7th day after second surgery before she could be evaluated for the primary. The histopathological report of the membrane revealed a diagnosis of metastatic adenocarcinoma (Figure 4A,B).

Figure 1: Axial CT scan showing right cerebral convexity chronic subdural hematoma with mass effect.

DISCUSSION

Dural metastasis from a malignant tumor has been reported in 10% of autopsy cases and its frequency is highest in patients with breast cancer, followed by those with lung cancer, malignant melanoma and gastrointestinal cancer (3). Uncommon tumors have been reported to present as dural metastasis and include rhabdomyosarcoma, endometrial adenocarcinoma, dermatofibrosarcoma protuberans, hepatocellular cancer, mammary carcinoma, and thymic carcinoma (2, 8, 10). Most of these present either as carcinomatous meningitis or dura-based mass lesion, confounding as meningioma at times. Subdural hematoma associated with dural metastasis is very rare with a reported incidence of approximately 0.02% in autopsy series (1). In an analysis of 51 reported cases of subdural hematoma by Kunii et al. (5), it was shown that the most common histological type of metastasis was adenocarcinoma and the most common primary tumor was located in the stomach.

Various factors have been postulated to cause subdural hematoma in a patient with dural metastasis. These include

Figure 2: A) Axial CT scan shows rebleed in chronic SDH with acute SDH formation with mass effect.

Figure 3: Axial CT scan shows craniotomy defect on right side with removal of acute SDH with obliterated surgical cavity with right posterior cerebral artery infarct.

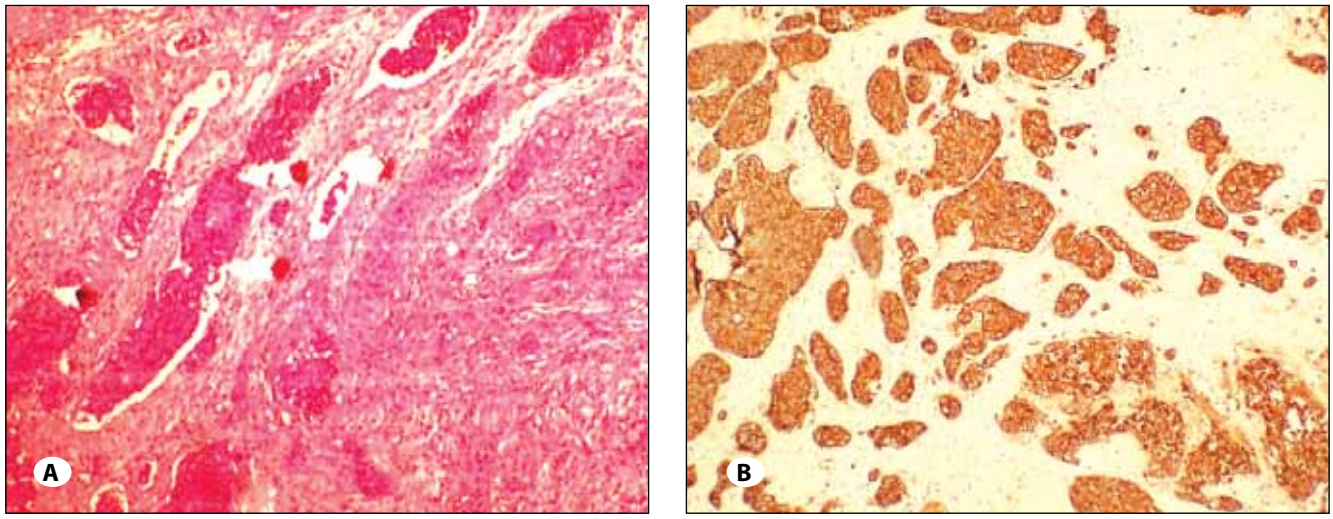

Figure 4: A) Section shows fibrocollagenous tissue (H & E stained, x10) infiltrated by tumor arranged in islands and nests along with tumor emboli. Tumor cells are round to oval with hyperchromatic nuclei, vesicular nucleoli, and distinct nucleoli and scant to moderate amount of cytoplasm. **B)** On immunohistochemistry (x20) tumor cells are positive for cytokeratin.

systemic malignancy/chemotherapy induced coagulopathy and DIC, exudation and bleeding from the neovascularized dura and tumour embolisation and obstruction of draining veins (1, 6, 9). Of these theories, the most widely accepted is the last one proposed by Russel et al. (9). He suggested that impaired blood perfusion occurred due to tumor embolism in the dural vein, thereby causing the dilatation and breakdown of capillary vessels, resulting in subdural hematoma. For such tumor embolization, two routes have been proposed: one via the artery and the other via the Batson's plexus; the latter, without a venous valve, allows dural metastasis of the intraabdominal tumors (4). Chronicity of malignancy induced SDH is variable and most (73.3%) present as acute or subacute form with only minor number (6.67%) presenting as chronic type (7).

As far as preoperative suspicion of a metastatic nature of chronic subdural hematoma is concerned, it is certainly very difficult, unless the patient is harboring a known primary. Radiology may be misleading in such cases as most of these metastatic lesions may be masked by the chronic SDH. In a study about the possibilities of finding metastasis as the cause for chronic SDH where routine fluid cytology and membrane biopsy were performed at surgery, it was found that 2 out of 4 patients had biopsy positive membrane. However, this study was undertaken on the confirmed cases of patients having primary neoplasm having secondaries who presented with chronic SDH (11). We support their approach of routine fluid cytology and chronic SDH membrane biopsy in all cases of chronic SDH. Without histopathological examination, we would never have known the real cause of subdural hematoma in our case. A positive histopathology may act as the starting point for searching for primary or other secondaries in such cases. There are few case series discussing the occurrence and pathology of SDH in patients of cancers. The most common etiology found was coagulopathy either due to primary or due consequences of therapy given for the treatment of primary (6).

Management of this type chronic SDH is difficult due to systemic nature of disease. If confirmed, a search for the primary lesion should be done. This will help in further management based on histological type. Prognosis is poor not only due to systemic spread of cancer but also because of poor general condition which precipitated by the adjuvant therapy given to control primary (6). From the neurosurgical point of view, evacuation of hematoma is most appropriate when it is causing mass effect and jeopardizing life. These patients are liable for multiple surgical interventions. Kinjo et al. (5) reported their patients responded to conservative therapy with mannitol or steroids. They stated that therapy should focus on the prolongation of meaningful survival and unnecessary surgery should be avoided. Although there are very few reports of patients surviving for even 3 years after successful management hematoma and later with control of systemic cancer with adjuvant therapy (7), overall these patients tend to have poor survival with one report stating a mortality of as high as 69% at 3 weeks.

CONCLUSION

Metastatic chronic SDH is a rare entity but must be considered as differential diagnosis while dealing with such cases. We recommend histopathological examination of subdural membrane and fluid cytology for malignanty cells in all cases.

REFERENCES

1. Ambiavagar PC, Sher J: Subdural hematoma secondary to metastatic neoplasm: Report of two cases and a review of the literature. Cancer 42: 2015-2018, 1978
2. Bentley AM, Keen JC: Dural metastases in prostate cancer. Clin Oncol (R Coll Radiol) 15: 165-166, 2003

3. Hirano A, Hojyo S: Metastatic tumors in the central nervous system. The neuropathological point of view (Part 2). Neurol Surg 8: 599-603, 1980 (Japanese)
4. Katsube T, Kikuchi T, Konnno S, Murayama M, Kobayashi R, Kuhara K, Yoshimatsu K, Shiozawa S, Shimakawa T, Naritaka Y, Ogawa K, Hagiwara S, Aiba M: Subdural hematoma associated with dural metastasis of gastric carcinoma: Report of two cases. Anticancer Res 27(6C):4339-4344, 2007
5. Kunii N, Morita A, Yoshikawa G, Kirino T: Subdural hematoma associated with dural metastasis. Neurol Med Chir 45: 519-522, 2005
6. Leech RW, Welch FT, Ojemann GA: Subdural hematoma secondary to metastatic dural carcinomatosis. Case report. J Neurosurg 41: 610-613, 1974
7. Nagaya T, Doi T, Katsumata N, Ishigure H, Matsuda M, Ito M: Subdural hematoma associated with dural carcinomatosis of gastric cancer and DIC. Gan No Rinsho 32: 923-926, 1986
8. Nejat F, Keshavarzi S, Monajemzadeh M, Mehdizadeh M, Kalaghchi B: Chronic subdural hematoma associated with subdural rhabdomyosarcoma: Case report. Neurosurgery 60(4):E774-E775,2007
9. Russell DS, Cairns H: Subdural false membrane or hematoma (pachymeningitis interna hemorrahagica) in carcinomatosis and sarcomatosis of the dura mater. Brain 57: 32-48, 1934
10. Sato N, Tsurushima H, Matsumura A, Meguro K, Doi M: A case of epidural hematoma due to dural metastasis. No Shinkei Geka 19: 447-450, 1991
11. Tseng SH, Liao CC, Lin SM, Chen Y, Shun CT: Dural metastasis in patients with malignant neoplasm and chronic subdural hematoma. Acta Neurol Scand 108(1):43-46, 2003