Chronic Subdural Haematoma Development Following Transsphenoidal Surgery for Pituitary Adenoma Apoplexy: An Incidental or Real Association

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Abstract

Occurrence of symptomatic chronic subdural haematoma (SDH) following transsphenoidal decompression of pituitary adenoma, which needed surgical evacuation, is not reported. Author reports a case of symptomatic chronic subdural haematoma observed in a series of 480-transsphenoidal surgery. A 52-year old female underwent transsphenoidal surgery for pituitary adenoma. She developed cerebrospinal fluid (C. S. F) rhinorrhoea in the immediate post-operative period, which responded to conservative therapy. She presented with severe headache and paresis of left lower limbs one month after cessation of C. S. F. rhinorrhoea, which necessitated burr hole evacuation of chronic subdural haematoma following which, noticed complete resolution of headache and limb paresis. Management of such cases and pertinent literature is reviewed briefly.

Keywords

Pituitary Adenoma, Trans-Sphenoid Surgery, Chronic Subdural Haematoma, Management

1. Introduction

Chronic subdural haematoma is common in elderly population usually as a sequelae of minor head injury; rarely chronic subdural haematoma can also develop following neurosurgical procedures of shunt surgery, aneurysm clipping and other intracranial tumor surgery. 1-5 However, a symptomatic chronic subdural haematoma as complication of pituitary adenoma approached through transsphenoidal approach, to the best of knowledge of authors, is not reported in the western literature. Authors report a 52- year- female developing chronic subdural hematoma, one month following transsphenoidal decompression surgery during follow-up period.

2. Case-Illustration

A 52-year-old female admitted with complaint of progressive diminution of vision for ten months. On examination, she was conscious; the visual acuity was 6/36 in right eye and 6/24 in left eye with bitemporal field defect. Fundi showed bilateral primary optic atrophy. Rest of the neurological examination was normal.

Contrast enhanced CT scan revealed large sellar tumor with suprasellar extension. [Figure-1] MRI brain showed marked expansion of sellar fossa, containing 4.7 x 4.1cm in size on T1WI isointense with large areas of hyperintensity on both T1 and T2WI suggesting subacute haemorrhage with suprasellar extending into suprasellar cistern causing distortion and displacement of optic chiasm. [Figure-2, 3] A1...
segment of both anterior cerebral arteries are draped on mass with erosion of sellar floor with extension into sphenoid sinus was observed. A transnasal transsphenoidal radical excision with packing of sella with fat and fascia was performed. She had intraoperative CSF leak. In the postoperative period, she had improvement in vision. However, she developed CS rhinorrhoea, which responded to conservative therapy. She was discharged after seventh day following Cessation of CSF rhinorrhoea. She reported to emergency services, one month after surgery with progressive headache and left sided hemiparesis; however she had no associated history of current clear watery discharge through nose or history of fever or associated neck rigidity. Neurological examination revealed left side upper motor neuron seventh cranial nerve paresis and left sided hemiparesis, the rest of examination being essentially normal. CT scan done after readmission revealed right temporoparietal chronic subdural haematoma. [Figure-4]. She underwent burr whole evacuation of hematoma, which was under high pressure. She noticed immediate relief in headache and hemiparesis also improved over three days. A repeat CT scan three months after burr-hole evacuation surgery revealed complete disappearance of chronic subdural haematoma with small residual pituitary adenoma.

3. Discussion

Traumatic chronic subdural haematoma is usually noticed in elderly age group within few weeks of minor head injury. The chronic subdural haematoma can also develop following various non-traumatic neurosurgical procedures. SDH development is potentially devastating complication, reported following shunt surgery in normal pressure hydrocephalus or nontraumatic intracranial surgery,\(^2\) following aneurysm surgery,\(^3\) encephalomyosynangiosis for Moya-Moya disease.\(^4\) Tanaka et al\(^3\) reported three cases of chronic subdural haematoma development, which required surgical evacuation following aneurysm surgery out of a total 147 cases. Koizumi et al\(^5\) also reported incidence of 1.8% following intracranial surgery among 169 cases studied, three cases developed SDH, out of which two were operated for tumour, and rest one had combined aneurysm surgery and VP shunt. For management of SDH, one case required burr hole evacuation and remaining two cases were managed conservatively in view of asymptomatic and responded well. Tanaka et al\(^6\) reported a case of chronic subdural haematoma following transsphenoidal surgery, which was managed conservatively, as this was asymptomatic. However, our case was symptomatic and showing progressive worsening in neurological status and necessitated urgent surgical evacuation of chronic subdural haematoma.

Cerebrospinal fluid rhinorrhoea following transsphenoidal surgery is a potentially serious complication. The incidence of postoperative CSF rhinorrhoea is up to 9.6%. The CSF rhinorrhoea usually subsides with conservative therapy. The persistence of CSF rhinorrhoea can predispose development
of tension pneumocephalus, meningitis, seizure etc.\footnote{11} A constant vigilance is required to monitor earliest manifestation of pneumocephalus and require prompt planning for further management. Delayed development of or recurrence of cerebrospinal fluid rhinorrhoea can mask the clinical feature of SDH.\footnote{11}

Subdural fluid collection is considered pre-existing condition for chronic subdural haematoma formation after head injury.\footnote{5} However, subdural fluid collection is noted to progress to chronic subdural haematoma.\footnote{5, 5} Subdural fluid collection in the cranial cavity has been noted following neurosurgical procedures for aneurysm surgery, brain tumour surgery. Even spinal subdural haematoma is reported to occur following intracranial surgery, including acoustic neuroma surgery.\footnote{8} The reported incidence of conversion of subdural fluid collection into frank chronic subdural haematoma in the nontraumatic intracranial neurosurgical procedure 1.8-3.9\%.\footnote{3, 4, 5} Various factors, which promotes postoperative subdural haematoma formation are brain atrophy, ventriculomegaly, blood mixed CSF in subdural space.\footnote{3, 5, 7}

by Watanable et al.\footnote{10} Schmidt and Reinhardt\footnote{12} examined duramater of 50 cases in which brain surgery or CSF drainage were performed, noticed development of neomembrane, which showed focal transition to the typical pattern of hemorrhagic internal pachymeningitis, this membrane could be responsible for recurrent bleed and evolution of chronic subdural haematoma. Tanka et al further stressed that subdural fluid collection can convert into chronic subdural haematoma.\footnote{5} They further demonstrated CT scan wise attenuation change from hypo density to hyperdensity. Koizumi et al\footnote{5} reported in additions to subdural fluid collection, preoperative ventricular dilation, brain atrophy seem to promote chronic subdural haematoma formation. Decompression of the intracranial space occupying lesion with removal large amount of cerebral parenchymal tissue or additional CSF drainage during the surgery makes the cranial cavity vulnerable to formation of subdural haematoma or fluid collection. Koizumi et al\footnote{5} reported artificial formation of large subdural space is important adverse effect of surgical procedure, as brain shrink by aspiration of CSF, by removal of tumour or brain retraction during surgery. Large subdural spaces formed at the time of dural closure so large subdural fluid is observed in immediate postoperative period, and gradually volume shrinks or very rarely convert into chronic subdural haematoma. Large subdural space may also promote rupture of bridging veins leading to development of chronic subdural hematoma.
Lee and Hong observed the communication between subdural space and large CSF spaces such as cisterns and ventricles is important and is supported by aneurysm surgery, sellar tumour surgery. In the current case, opening of suprasellar cistern and persistent drainage of CSF in postoperative period might have resulted into formation of large subdural space, in which persistent slow oozing of blood or collection of blood from other sources, have potentiated the process of chronic subdural haematoma formation.

The clinical manifestations are obscure because of primary lesion or other complications. The management of these chronic subdural haematoma following neurosurgical procedure is dependent on the clinical symptoms, progress of symptoms, neurological deficit as well as the thickness and mass effect. Tanaka et al reported good result following surgical evacuation of chronic subdural hematoma. However, there was only case reported in the literature, who developed subdural hematoma following transsphenoidal pituitary adenoma excision, was managed conservatively. However, our case had marked neurological deficit with progression of deficit, necessitated surgical evacuation.

4. Conclusion

Any patient after neurosurgical intervention including transsphenoidal surgery report with focal deficit or feature of increased intracranial pressure possibility of chronic subdural hematoma though incidence is very rare should be suspected. However, the management is dependent on many factors; however, suitable selected patient may show dramatic neurological recovery following surgical evacuation of chronic subdural hematoma.

References