Pituitary macroadenoma presenting with pituitary apoplexy in Sanglah Hospital, Bali-Indonesia

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ABSTRACT

Introduction: Pituitary apoplexy (PA) is a rare clinical syndrome in adolescents that can cause a life-threatening situation. This review describes the main clinical and MRI findings in two patients with pituitary macroadenoma presenting with pituitary apoplexy in Sanglah Hospital.

Case Report: A 61-year-old male patient was admitted to the Sanglah Hospital because of a sudden intense headache, accompanied by nausea and vomiting, and a history of blurred vision. Physical examination showed papil atrophy in his left and right eyes. His laboratory finding was unremarkable. The second case is a 57-year-old female patient, was admitted because of sudden-onset severe headache, with vomiting and fever as well. Laboratory testing showed an elevated prolactin level.

Discussion: Haemorrhage and necrosis within a pituitary tumor are frequently incidentally observed by Magnetic Resonance Imaging (MRI) or Computed Tomography (CT). They are often asymptomatic, configuring the subclinical pituitary apoplexy, and occur in 14 – 22% of patients with a pituitary macroadenoma. MRI predominantly showed an intra- and suprasellar expanding mass with different signal intensities on T1WI and T2WI, depending on the presence of hemorrhage and its stage. In first patient the MRI findings are extraaxial mass from intra to supra sella which attached to cavernous sinus and caused compression of chiasma opticum to superior. The second patient showed a pituitary tumor without supra-sellar expansion. In these two patient, the masses showed isointense and hyperintense signal intensity in T1WI, T2WI, FLAIR indicating the presence of intratumoral hemorrhage, and after Gad revealed inhomogen contrast enhancement.

Conclusion: Two patient in Sanglah Hospital showed acute clinical syndrome appearance of apoplexy, simultaneously with the presence of pituitary macroadenoma hemorrhage in MRI findings. The situation must be reported immediately because early diagnostic and prompt treatment it’s very important for a better prognosis.

Keywords: pituitary, macroadenoma, apoplexy, MRI.

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INTRODUCTION

Pituitary Apoplexy (PA) is a clinical syndrome which considered as a rare and potentially fatal.1 Its frequent clinical presentations included acute or sudden onset headache, visual impairment and ophthalmoplegia, whereas vomiting, altered consciousness, and panhypopituitarism also can be present.2 Those clinical symptoms were important to be examined in order to establish the diagnosis of PA, and often related to hemorrhagic infarction of the pituitary gland. More importantly, when the patients reporting the syndrome, the physicians have to consider about adenoma, because it is usually found in a pre-existing macroadenoma occurring in almost 3% of patients with this kind of neoplasm.3

Conducting the working diagnosis of PA is challenging, because the differentiation between PA and other differential diagnosis; subarachnoid hemorrhage, cerebral venous sinus thrombosis or cervical artery dissection, and pituitary abscess, is of vital importance due to different ways of treatment. Thus, in order to rule out other pathologies showing similar symptoms, imaging is an important choice to be taken.

Magnetic Resonance Imaging (MRI) is the most important and useful tool in ruling out the differential diagnosis of PA, with the ability to identify the presence of an adenoma and its hemorrhagic degeneration. MRI is a kind of imaging tools which superior to Computerized Tomography (CT) in diagnosing PA, with a sensitivity ranging from 88% to 90%.4,5 This review describes the main clinical and MRI findings in two patients with pituitary macroadenoma presenting with pituitary apoplexy.

CASE REPORT

Case 1. A 61-year-old male came to Emergency Room (ER) of Sanglah Hospital Denpasar complained about sudden intense headache, nausea, vomiting, history of blurred vision. Physical examination revealed bilateral papil atrophy in both eyes. MRI findings in this patient showed an extra-axial mass originated from intra- to suprasellar, attached to cavernous sinus, caused compression of chiasma
opticum to superior. Another findings were a hyperintense in T1W1, T2W1, with fluid-fluid level which indicates the presence of intratumoral hemorrhage and heterogeneous contrast enhancement revealed with Post Gad.

Case 2. A 57-year-old female was presented with sudden-onset severe headache, vomiting, and hyperpyrexia. Laboratory findings found that her serum prolactin level was elevated. MRI findings revealed extra-axial mass from intra- to suprasellar, hyperintense in T1W1 and T2W1 which indicating the presence of intratumoral hemorrhage. Post Gad revealed an inhomogeneous contrast enhancement.

DISCUSSION

The most common symptom of PA is a sudden onset, severe, and frequently retro-orbital in location headache, with an incidence of 90–97%.5 A cohort study by Li et al. has shown that the most common clinical symptoms of PA were headache (70%) and visual disturbances (27%).5 That kind of headache includes PA into the differential diagnosis of “thunderclap headache”, which often make it more difficult in assessing PA with more frequent diseases such as subarachnoid hemorrhage and cerebral venous sinus thrombosis or cervical artery dissection, or pituitary abscess.8 The second most frequent symptom is the visual deficit, ranging from 50 to 82% of cases, followed by nausea, vomiting, and ocular palsy (25–50 %).3,6

Figure 1 Extra-axial mass from intra to supra sella, attached to cavernous sinus, caused compression of chiasma opticum to superior. Isointense and hyperintense signal intensity in T1W1, T2W1, indicating the presence of intratumoral hemorrhage

Figure 2 Extra-axial mass from intro to supra sella, Isointense and hyperintense signal intensity in T1W1, T2W1, indicating the presence of intratumoral hemorrhage

The pathophysiological mechanism in the genesis of apoplexy remains unclear. There is a possible mechanism which outgrows its blood supply with eventual ischaemic necrosis followed by hemorrhage, that is the subacute and excessive growth of the pre-existing adenoma.2 The size of the adenoma considered to be the greatest risk factor. Macroadenoma, which size is greater than 1 cm, is more likely to develop apoplexy than microadenoma. On the other hand, pathologic and dynamic imaging studies have shown that both of macro- and microadenomas are less vascularised than the pituitary gland, so that a relatively fast growth can exceed this low blood supply, despite it does not explain the onset of PA in patients with small adenomas or with a healthy pituitary gland. Beside that condition, lack of corticotropic hormone can lead to a serious hemodynamic instability causing a life-threatening situation, likely to be seen in 50-80% of the adult patients with PA.7

In both of our patients, MRI imaging showed a space occupying lesion (SOL) at the site of sella turcica. Among all imaging studies, MRI is superior in ruling out differential diagnosis of PA, being able to identify the presence of an adenoma and its hemorrhagic degeneration with a sensitivity ranging from 88% to 90%.4 The most frequent MRI feature of PA is with hyperintensity on T1WI in the sellar region, on the other hand, the typical feature of abscess in pituitary gland are hypointense on T1WI but hyperintense on T2WI. A study by Semple et al. demonstrated that MRI features of PA correlate with the pathologic reports and operative findings, so thus MR imaging can be used to accurately predicted PA.8

It is well known that the signal of blood clots in MRI changes over time. T2WI showed areas of heterogenous signal intensity, with the presence of a possible thin peripheral ring of marked hypointensity, representing haemosiderin and ferritin deposition.

In the acute phase (0–7 days), due to the susceptibility effect, deoxyhemoglobin leads to shortening of the T2 relaxation time and the MRI signal is hypointense on T2-weighted imaging (T2WI) with isointensity or slight hypointensity on T1-weighted imaging (T1WI). In the subacute phase (7–21 days), methemoglobin shortens the T1 relaxation time and the hemorrhage will appear hyperintense on T1WI as well as on T2WI. Meanwhile, in the chronic phase (>21 days), macrophages digest the clot and strong hypointensities on both T1WI and T2WI are appeared because of the presence of hemosiderin and ferritin.8
Intra- and suprasellar expanding mass with different signal intensities on T1WI and T2WI depending on the presence of hemorrhage and on its stage. In most cases, MRI performed during the acute phase of the clinical syndrome shows areas of hyperintense. After intravenous gadolinium administration, a slight and inhomogeneous contrast enhancement is evident. These T1WI and T2WI features were consistent with a hemorrhage, although rim enhancement after gadolinium administration is more often seen in pituitary abscess (64%) than in PA (36%).

CONCLUSION

Two patients showed acute clinical syndrome appearance of apoplexy, simultaneously with the presence of pituitary macroadenoma hemorrhage in MRI findings. Among all imaging studies, MRI is superior in ruling out differential diagnosis of PA, being able to identify the presence of an adenoma and its hemorrhagic degeneration. The situation must be reported immediately, in order to give a proper early diagnosis and prompt treatment, thus a better prognosis can be achieved.

CONFLICT OF INTEREST

The author declares there is no conflict of interest regarding publication of current report.

REFERENCES


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