Proposed Recommendations for Pre-operative Diagnosis of Spontaneous Arterial Acute Subdural Haemorrhages

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Introduction

Spontaneous arterial acute subdural hemorrhage is a well-known entity since it was first described in 1922 by Werkgartener. Various small case series and isolated case reports have been published but in all these the diagnosis was made retrospectively when arterial bleeder was identified during surgery. No attempts have been made with regard to pre-operative diagnosis, which would have been helpful in surgical planning and medico legal issues.

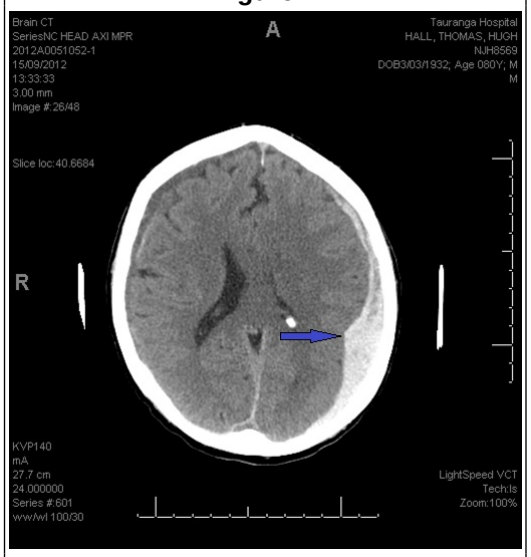
Methods

Twenty four patients were admitted between June 2006 and December 2013 with post-operative diagnosis of spontaneous arterial subdural hemorrhages. Demographics, radiological findings, and outcome of these patients was reviewed and compared with 14 patients operated for non-arterial acute subdural hemorrhages during the same period.

Results

Both groups were comparable demographically and all the patients were assessed with pre-operative CT head. Twenty (83.3%) patients with arterial bleed had extensive subdural hemorrhages all over the convexity of cerebral hemisphere with fronto-temporo-parieto-occipital spread whereas 71.4% of non-arterial subdurals were more limited to the anterior fronto-temporal area. Midline shift/maximum thickness of subdural hemorrhade ratio was much higher in arterial (mean 0.83; 71.4% patients having a ratio of > 0.75) compared to non-arterial group (mean 0.65; 63.6% having a ratio < 0.75). Classical 'hillock sign' (Figure 1, 2 and 3- **arrowed**), suggestive of arterial rent, was present in all the patients with arterial SDH compared to 50% of non-arterial SDHs. All three radiological signs were positive in 40% of arterial SDHs with a positive predictive value of 88.9% and a negative predictive value of 39.3%. As in other published literature, prognosis of spontaneos arterial subdural hemorrhages were better than their non arterial counterparts.

Figure 1



Classical Hillock Sign (arrowed)

Figure 2

Large acute subdural with 2 Hillock signs.

Figure 3

Large subdural with midline shift and frontal Hillock sign.

Learning Objectives

By the conclusion of this session, participants should be able to:

1)Develop an awareness about spontaneous arterial subdural hemorrhages

2)Identify radiological signs that would aid in pre-operative diagnosis of arterial subdural hemorrhages

Tips for Managemenet

1. Requires large craniotomy flap
2. Evacuate all soft clot, careful while removing firm clot- arterial rent site
3. With CT findings (hillock), search for arterial bleed
4. Avoid conservative management waiting for the haematoma to mature
5. Chances of re-bleeding when the haematoma maturesEnter text here

Conclusions

Extensive spread of the subdural (involving occipital region), higher (>0.75) midline shift/ thickness of SDH ratio, and 'hillock sign' seem to be reliable radiological signs to predict acute SDHs of arterial origin pre-operatively.

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