Volume 2
Number 2

BULLETIN OF THE NEURO STUDY CLUB

NEURO IMAGE

THE INVESTIGATION OF PITUITARY ADENOMAS

Things have changed rapidly in this chapter of neuroradiology.

It is only a few years ago that the advent of polytomography had opened new hopes in the diagnosis of small adenomas. Sutton and Vézina, in a now classical paper, had described the minute erosion in the floor of the sella turcica.

Computed tomography in its early days gave little hope that it would challenge polytomography in this battle.

But this day has come. Higher resolution and thinner collimation have allowed exploration of the sellar floor as well as polytomography and even more, outlining the different densities of the intrasellar content.

In this issue, Sonny Taylor tells us about his experience in coronal computed tomography of the sella. He has been one of the pioneers in this field and is convinced that it has now replaced polytomography for good.

Most people using scanners, modern enough to do quality coronal tomography, recommend that the step of conventional polytomography be dropped and to proceed to direct coronal computed tomography.

Should a base line skull examination be done first ?
That remains unanswered !

Denis Melançon

CORONAL COMPUTED TOMOGRAPHY OF THE SELLA

More than 200 sellas have been studied in the coronal plane with 5 and 1.5 mm slices. The bony floor is much better seen than with A.P. polytomography. Recently 50 sellas were also studied with a prototype high contrast soft ware program giving excellent bony spatial resolution down to 0.5 mm. This gives even more detail.

Intra, para and supra-sellar structures are extremely well seen; their visualization directly gives much more information than visualization of the floor alone with polytomes. Coronal cuts also avoid lens radiation. Variations of the sellar floor can be analyzed much better if the pituitary contents (tumour, C.S.F., normal gland) directly above are seen. A large number of microadenomas cause changes of the floor and can be picked up by polytome. But many "normal variations" have similar floor changes. With C.T., variations in size and contour of the pituitary contents also exist; and the diagnosis of a homogeneous density (iso y) upper-normal sized gland could be difficult. Infusion, plus several other major and minor criteria, plus analysing the floor below, makes this an extremely sensitive study if performed with proper technique and attention to detail. Further confusion exists when one considers that 20% of normal glands at autopsy have adenomas and the line between hyperplasia and adenoma may be thin. So, C.T. does not give the absolute answer even if the gland is well seen: but it does add an extremely new,sensitive, and powerful dimension.

Reconstruction was done in 6 very obese elderly patients using multiple 1.5 mm slices. By simple physics, reconstruction is much inferior even with the very best reformat program. The important sinus floor - sellar contents - interface cannot be seen as well with axial slices. 1.5 mm axial is not the way to "see" the floor. Also, low contrast (soft tissue) resolution will be ruined, and small structures missed. 5 mm gives less noise, better soft tissue (low contrast) resolution; but will average sinus, bone, gland and degrade spatial resolution.

Therefore, properly done direct coronals are far superior (if anyone denies this, his coronals are of poor quality). Technique of positioning (supine v.s. prone, table elevating board v.s. gantry tilt) is the most critical consideration.

Sonny Taylor
St. Paul, Minnesota
February 1981