MRI Assessment of the Intercristal Line in Pregnancy

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The intercristal (IC) line is an important landmark for estimation of vertebral levels for neuraxial anesthesia. In non-pregnant women, it is most frequently at L4 or L4-5. [1] In pregnancy, it is speculated to be higher than L4. By ultrasound, we previously showed the IC line was at L4 or L4-5 in 71% of 51 pregnant subjects and in 12%, was ≥L3. By Xray, in 163 men and non-pregnant women, the IC line was as high as L3-4 in <4% of cases.[1] Ultrasound is not considered a gold standard technique. MRI is a gold standard technique for examination of the lumbar spine and IC line. We aimed to determine the position of the IC line in pregnancy, using MRI and to compare with non-pregnant controls.

Methods: With IRB approval, a retrospective search of the picture archiving system was performed (6/08 -12/10). Scans performed for any reason in pregnancy (≥35wks), where lumbar spine and pelvis were included, were selected. The most common reasons for MRIs were suspected appendicitis or placenta accreta. Patients were supine.

As reported previously,[2] for axial scans, the slice where the iliac crests disappeared was located by scrolling up from the sacrum. The corresponding vertebral body or interspace was noted. On coronal slices, the superior border of the iliac crest was located by scrolling from posterior to anterior. At that point, the corresponding position on the vertebral column was also noted. Vertebral bodies were divided into thirds.

Results:
Age (yrs) Gest Age (wks) Conus IC Line
33 37 L3-L4 L5 (U)
24 38 >L1 L5 (M)
35 37 L1 (M) L4 (L)
45 40 L1 (L) L4-L5
35 36 > L1-2 L5 (M)
38 37 L2 (U) L5 (M)
(U=upper, M = middle, L = lower)

Findings were similar to 17 non-pregnant controls.

Discussion: No conclusions can be drawn from the results of this pilot study. A limitation is that patients were supine and the lumbar spine was not flexed. We intend to gather more data, in collaboration with other centers.

References:
1) Render CA. The reproducibility of the iliac crest as a marker of lumbar spine level. Anaesthesia 1996;51(11):1070-1.

Figure: MRI Abdomen (coronal view). Line drawn at superior aspect of iliac crests. Curved arrow shows fetus in utero.