**Introduction**

Spina bifida type of open neural tube defect results from failure of closure of distal neuropore during embryogenesis. First trimester diagnosis is challenging.

**Material and Method**

720 patients were referred for Nuchal translucency (NT) scan between Jan 2018 to March 2019. The mid-sagittal plane was studied in detail. After measuring NT, we also evaluated the 3 echogenic lines in posterior fossa. We measured intracranial translucency (IT). Spine was evaluated in sagittal and coronal sections, the brainstem (BS) and brainstem occipital bone (BSOB) ratio was calculated in suspected cases.

**Findings**

We diagnosed 3 cases of open spina bifida. In these cases, the normal 3 echogenic line pattern of posterior fossa was not seen. IT could not be measured. BS:BSOB ratio was >1. Kyphosis and deficient skin seen in 2 patients, meningocele seen in 1 patient.

**Discussion**

Due to leakage of CSF in amniotic fluid, pressure in subarachnoid space reduces with caudal displacement of brain, leading to obliteration of fourth ventricle and/or cisterna magna. In the 1st trimester this caudal shift is seen as absence of 3 white lines and non-visualization or decrease in size of IT. There is thickening of brainstem and shortening of distance between BSOB, leading to increase in BS : BSOB ratio to >1. The midbrain–brainstem junction is shifted below the maxillo-occipital line. We confirmed this finding retrospectively in all 3 patients.

**Conclusion**

Evaluation of the posterior fossa, measuring IT and scanning the spine in sagittal and coronal sections is extremely useful for diagnosing spina bifida in first trimester.