ROLE OF 3-D ULTRASOUND IN LIMB ABNORMALITIES

ADVANCED RADIOLOGY CENTRE
ARC
STATE-OF-THE-ART CARE

NEWS LETTER
APRIL-2006

ONE STEP AHEAD IN ULTRASOUND IMAGING...
3D + 4D IMAGING

FACILITIES:-
- WHOLE BODY-ULTRASOUND
- COLOR DOPPLER
- MAMMOGRAPHY
- BMD-DEXA
- CT-SCAN
- DIGITAL X-RAY
- ECHO CARDIOGRAPHY
- PATHOLOGY

Add :
4, Royal Sands,
'A' wing, Near Fame Adlab, New Link Rd,
Andheri-(W),Mumbai.
Tel: 2630 55 67/68/69
E-mail:
arcbombay@vsnl.net

Timings:
9.00 am to 8.00 pm

CASE REPORT:

A 30 year old 2nd gravida with 24 weeks amenorrhoea was referred to our centre for a routine detailed anomaly scan. The patient had no risk factors and her medical and pregnancy history was unremarkable. No 1st trimester USG was available.

On examination the fetus corresponded with the menstrual age according to BPD,HC & AC parameters. However all the fetal long bones of the upper and lower extremities were short in length corresponding to 20-21 weeks (less than the 5th percentile or 2 SD'S) suggestive of rhizomelic and mesomelic dwarfism.

Abnormal position of both the lower limbs and both feet were noted on 2-D examiantion.However on 3-D / 4 D examination, the complex joint anomalies in form of severe flexion deformities of both the hips with hyper extension deformity at the knees were clearly visualized. Bilateral talipes equino varus was also identified.No lower limb movements were noted during the entire course of the examination. No joint deformities of the upper limbs was seen. Mild hydramnios was noted. No associated CNS, CVS, gastrointestinal or genitourinary abnormalities detected.

Based on these findings a diagnosis of short limb dysplasia with arthrogryposis was made. The diagnosis was confirmed after the fetus was delivered by hysterotomy.

DISCUSSION

Arthrogyposis is a group of disorders characterized by congenital fixed joint contractures at multiple sites. Synonym for arthrogryposis is fetal akinesia/ hypokinesia sequence. In arthrogryposis multiple joint contractures are caused by decreased fetal movements. These can be due to neuropathic, muscular, connective tissue disorders, space limitations in the uterus or infections.

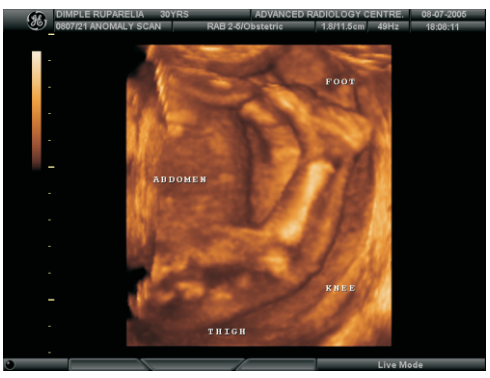
Inheritance- Distal arthrogryposis syndrome is an autosomal dominant disorder with extensive variability of expression. In other forms the pattern of inheritance is recessive or X-linked.

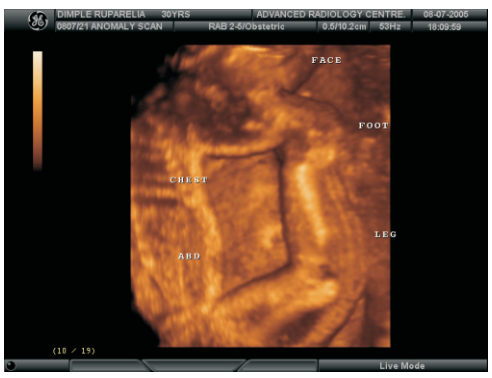
Prevalence of arthrogryposis is un-known.

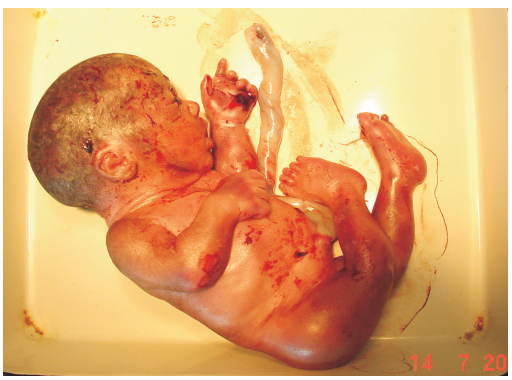
Major prenatal USG findings in arthrogryposis is abnormal limb position with restrictive fetal moment of more than one joints. It is usually evident in the 2nd trimester. However markers such as increased nuchal translucency and decreased fetal limb movements can been seen in the 1st trimester. Commonly found abnormal limb positions are genu valgus, genu recurvatum, club feet & hand.

Associated anomalies like facial defects, agenesis of corpus callosum, cataracts & renal defects have been noted.

Prognosis depends on the degree of involvement and cause of arthrogryposis and ranges from lethal disorders to those with only mild to moderate orthopedic limitations. Usually the prognosis of the babies that are diagnosed prenatally is poor.







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CONCLUSION

The early and accurate antenatal diagnosis of lethal skeletal dysplasia and other skeletal anomalies with a poor outcome is important for planning the management of pregnancy. Careful sonographic examination of the fetus in the 2nd trimester helps detect such anomalies and the characteristic features may suggest the possible differential diagnosis.3-D and 4-D ultrasound examination adds valuable information to the 2-D USG and helps to confirm the diagnosis and gives better delineation of the complex limb and joint abnormalities.

References:

1. Bui TH, Lindholm H, Demir N, Thomassen: Prenatal Diagnosis of distal arthrogryposis by USG Prenatal Diagnosis 1992.

2. Goldberg JD, Chervenak FA, Lipman RA, Berkowitz RL: Antenatal sonographic diagnosis of arthrogryposis multiplex congenita. Prenatal Diagnosis 1986.

3. Structural Fetal Anomalies, The Total Picture: Roger C. Sanders.

4. Diagnostic Imaging of fetal anomalies : Nyberg.