NEONATE WITH MIXED GONADAL DYSGENESIS: CHALLENGES IN SEX ASSIGNMENT

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Background and Aims

45,X/46,XY mixed gonadal dysgenesis (MGD) is a disorder of sex development characterized by a broad phenotypic spectrum. Patients may have unilateral, bilateral or no testis, streak gonads and/or persistent Mullerian structures. It poses a great clinical challenge due to known effects on growth, hormonal balance and gonadal development.

Clinical Case Report

A term new-born infant, delivered at home, presented to the neonatal unit with ambiguous genitalia. Examination revealed a 1.5 cm midline phallic structure, with labial-scrotal folds with rugosity but no urethral opening (Figure 1), two external openings at introitus (urethral and vaginal) (Figures 2 and 3), and bilateral palpable inguinal gonads, right larger than left .

Figure 1. Midline phallic structure, labial-scrotal folds with rugosity

Figure 2. Two external openings at introitus

Figure 3. Examination under anaesthesia of the two external openings

Figure 4. Right gonadal tissue

Figure 5. Left sided Structure resembling fallopian tube.

Results

Ultrasound of the pelvis showed a uterus, cervix and vagina with possible right intra-abdominal testis. The neonate passed a synacthen test and had normal 17-Alpha-Hydroxyprogesterone. Gonadotropins (Follicle stimulating hormone and Luteinizing hormone), testosterone and Anti-mullerian hormone were normal but there was no detectable oestradiol. Cytogenetic investigation included FISH and karyotype which showed 45,X[22]/46,X,idic(Y)(q11)[8].ish idic(Y)(p11.3)(SRYx2), of which 25% of cells were Y-containing, while 75% were X-containing. Exploratory laparoscopy with biopsy of bilateral gonads showed right gonadal tissue (Figure. 4) and left hemi-uterus and fallopian tube with no ovary (Figure. 5). Histology confirmed right testicular tissue and left sided structure resembling fallopian tube showed no ovarian stroma, primordial follicles, nor seminiferous tubules. Findings and options regarding sex of rearing, surgical and medical treatment, were discussed in the family conference. The structure of discussion is appended in [Table 1](#).

Table 1: Structure of discussion with patient's family

Sex of Rearing	Surgical Procedures Needed	Future Hormone Therapy	Fertility	Sexual Function	Urinary Function	Risk of Cancer in Testes
Female	❖ Clitoral reduction ❖ Removal of testes	Estrogen during puberty	❖ Infertile ❖ Can conceive with egg donation but with risk as uterus is abnormal	Intercourse possible	Intact	Nil
Male	❖ Construction of penis, scrotal sac and urethra ❖ Orchidopexy ❖ Removal of uterus and fallopian tubes	May not need testosterone	❖ Sub-fertile ❖ Sperm banking may be possible	Penile function affected (erection during intercourse)	May need to sit for urination	Approximately 10%
No assignment currently; decision later	❖ To decide at 21 years of age ❖ Reconstruction may be more difficult at later age. ❖ Genitalia may resemble male appearance as testosterone is active up to 1 year.	Depends on chosen sex	❖ Sub-fertile as male ❖ Infertile as female	Depends on chosen sex	Sit for urination currently Requires reconstruction later	Approximately 10%

Conclusion

The management of MGD is multi-disciplinary. Gender assignment is based on the consideration of several factors, including external and internal genital findings, the role of surgical procedures required, future prospects of hormone replacement, fertility, urinary & sexual function and risk of gonadal malignancy. In addition, social and psychological support is important as the family makes the decision on gender assignment.