PECTUS EXCAVATUM: OVERVIEW AND CASE STUDY

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INTRODUCTION
This case study presents diagnosis and treatment of a patient with pectus excavatum (PE). PE is characterized by depression of the lower sternum and is the most common congenital abnormality of the anterior chest wall. PE ranges in severity from a minor depression to a deep concave hollow capable of displacing the heart and intrathoracic structures. The etiology of PE, though not well understood, resembles other multifactorial inheritance pathologies. PE could be mild and asymptomatic but could also progress in severity, causing physical symptoms and psychosocial problems, especially during adolescence. Evaluation of PE involves chest radiography or computed tomography scan plus or minus more advanced studies depending on the severity of the ailment. Current treatment of PE involves modified and less invasive surgical procedures with better outcomes and lesser complications. Adequate education, evaluation, follow-up, and referrals are important for nurse practitioners to achieve optimal health outcomes for PE patients.

OVERVIEW
Pectus excavatum (PE), also called “funnel chest” is a common anterior chest wall disorder (1). The etiology of PE is not well understood, but hypotheses include:
- Multifactorial inheritance (1)
- Abnormally short central diaphragmatic tendon (5)
- Abnormal development of the costal cartilage (5)
- Genetic disorder resulting to overgrowth of the costal cartilage and ribs (2,3)
- Abnormal intra-uterine pressure on sternum and costal cartilages (2,5)

EPIDEMIOLOGY
Occurs 1,400 births (1,2,3)
- Makes up ~90% anterior chest wall abnormalities (2)
- 3-5 times more in males than females (1,2)
- Less prevalent in Blacks and Hispanics (1)
- 1/3 of PE occurs in first year of life
- Rarely resolves spontaneously (2)
- ~1/3 of cases progress in severity especially in adolescence during growth spur (2)
- Severity may remain the same throughout life (2)

CLINICAL PRESENTATION
Psychosocial problems related to appearance, more common in females than males (1,2,6)
- SOB, easy fatigability, exertional intolerance, chest pain, especially in adolescents (1,2,6)
- CT scan may show moderate to severe cardiopulmonary displacement/impressions (1,2)
- PFT may reveal respiratory restrictions (2)
- Stress test may reveal cardiopulmonary limitations
- ECG may reveal conduction abnormalities
- ECHO may reveal right ventricular outflow obstruction.

CASE PRESENTATION
Three-month old Hispanic male brought to primary care clinic with complaint of depression of anterior chest wall by his mother. No accompanying symptoms such as respiratory distress reported.

Prenatal Hx: G2P1T1L1. GBS+, normal prenatal ultrasound
- Birth Hx: L=54.6cm; wt. 9 lbs 7oz (4.281 kg); Hc=36.2cm; APGAR – 1min/99; SVD; 40/67 weeks; breast/bottle fed
- Neonatal Hx: APGAR 95/min

Newborn Screen: Result WNL
- Feeding: Similac 6 oz qhr.

Developmental Hx: WNL
- Immunization: Up to date
- Family Hx: MGM, PFG DM type 2; two second cousins have PE
- Social Hx: Parents married, Hispanic, 1 brother

Allergies: NKDA
- Medication: none

ROS: unremarkable except sternal depression

EVALUATION
Physical exam of patient only revealed a mild depression of lower sternal area.

Physical exam is useful for revealing any coexisting disorder such as scoliosis; symptoms such as tachypnea, fast heartbeat, fatigue, cyanosis, etc. which may manifest as child gets older especially toward adolescence; development of any associated disorder.

- Importance of keeping clinic appointments.
- Surgery options; benefits, and complications
- Need for restrictions & avoiding trauma post-operatively

PATIENT: Boy's chest, before and after surgery for pectus excavatum (Nuss procedure) at Mayo Clinic. Source: http://www.mayoclinic.org/pectus-excavatum/mhl/0005462.html

EDUCATION & FOLLOW-UP
- Patient’s parents were educated on the following:
  - Nature of PE.
  - Need to monitor for symptoms such as tachypnea, fast heartbeat, fatigue, cyanosis, etc. which may manifest as child gets older especially toward adolescence; development of any associated disorder.
  - Importance of keeping clinic appointments.
  - Surgery options; benefits, and complications
  - Need for restrictions & avoiding trauma post-operatively

PATIENT will continue routine wellness check-up

Patient will follow up with cardiologist periodically to continue monitoring progression of the disorder.

Referral to other specialists/surgery will depend on:
- Index ≥ 3.25 (15) significant cardiopulmonary dysfunction; recurrence after surgery; psychosocial problem; progressing severity; worsening cardiorespiratory symptoms (1,2)

REFERENCES

Raw text not transcribed into a reference list.