Efficacy and long term outcome of minimally invasive resection for abdominal neuroblastic tumors

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Questions

- MIS
  - Potential advantages and risks
  - Indications
  - Technique
  - Morbidity
Background

- MIS for abdominal neuroblastic tumors

  - Recent advances in neuroblastomas and ganglioneuromas

- Laparoscopic adrenalectomy
  - Heloury Y et al, J Pediatr Surg 2011, accepted for publication
Questions

• MIS for abdominal neuroblastic tumors
  – Potential advantages and risks
  – Indications
  – Technique
  – Morbidity
  – Oncological result (local recurrence)

De Lijster MS et al, Cochrane Database Syst 2010
Material and methods

- Retrospective study (1988-2010)
- 2 centers (Nantes, Melbourne)
- Neuroblastic abdominal tumors (ganglioneuromas and neuroblastomas) resected by MIS
- Follow-up longer than 12 months
- Criteria: local recurrence
Results

- 31 cases (1998-2011) 154 neuroblastic tumors
  - 26 FU longer than 12 months

- Median age: 34 months (2-155)
  - 6 < 18 months
  - 3 Prenatal

- Stage
  - L1: 14
  - M: 8
  - Ms: 4

- Size: 40 mm (20-110)
Results

• Technique
  • Lateral transperitoneal: 23
  • Prone retroperitoneal: 3

• Duration: 70 min (40-200)

• Conversion: 0

• Associated procedures: 7
  • ovarian cryopreservation: 2
  • liver biopsy: 2
  • fundoplication: 1
  • gastrostomy: 1
  • closure of colostomy (cloaca): 1

• Postoperative complication: 1 intestinal obstruction (3 mm port)
Results

• **Quality of resection**
  - Macroscopic: 26
  - Microscopic: 17 (65%)

• **Histology**
  - 21 neuroblastomas
  - 5 ganglioneuromas

• **MYCN amplification**: 2 (M)
Results

- **Follow-up:** 66 months (4-120)

- **L1:** 14
  - 9 neuroblastomas; 5 ganglioneuromas
  - EFS: 100%

- **M:** 8
  - No local recurrence
  - Death: 3 (1/3MYC-N amplified) recurrence or progression of metastasis
  - 5 EFS

- **MS:** 4
  - 1 death: metastatic recurrence at 20 months (secondary MYCN amplification)
  - 3 EFS
**Potential advantages**

- **Pain**
  - Appendicitis (Lejus C et al, Anesthesiology, 1996;84:801-6)
  - Pyloric stenosis (Leclair MD et al, J Pediatr surg, 2007;42:692-8)

  RCT: no difference for limited procedures

- **Intestinal obstruction**
  - 3.7% after open surgery for tumors

  - 0.89% after laparoscopy

- **Scars**
Discussion

- Morbidity: minimal in a very selected population (20%)

- Oncological result
  - No local or port site recurrence
  - In stage M, MIS can help to keep the pace of treatment (high dose chemotherapy with autologous stem cell support)
• **Indications**

  - Surgery is the cornerstone of the treatment of localized NB
  - Surgery is controversial in
    - metastatic NB (CR or VGPR of metastasis)
    - Infants with prenatal or incidental diagnosis
  - Laparoscopy for tumors without Image Defined Risks Factors (IDRF)
Discussion

• L1 (no IDRF): MIS except some infants (wait and see policy)
  • Diagnosis
  • Biology (MYC-N, ploidy)
  • Classification and prognosis

• L2 (IDRF) or M
  – core biopsy and neoadjuvant chemotherapy
  – after chemotherapy
    • no IDRF: MIS
    • IDRF: open surgery
Discussion
Discussion

- Limited place of MIS for neuroblastic abdominal tumors

- Careful selection on imaging

- Selected indications: good local control

- No specific morbidity