The role of laparoscopy in recurrent right lower quadrant pain in children

Ann. Ital. Chir., 2015 86: 42-45
pii: S0003469X15023155

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The role of laparocopy in recurrent lowe quadrant pain in children

According to scientific literature, laparoscopy as aid in diagnosis and therapy for chronic pain in the right iliac quadrant shows a undeniable advantage thanks to its mini-invasiveness, the possibility of a methodical and thorough exploration of the entire abdominal cavity in those cases of recurrent pain, emotionally and socially debilitating, that do not find an answer in the usual etiological diagnostic clinical-instrumental. In those cases in which any significant organic pathology that justifies the recurring pain in the right iliac fossa is found during laparoscopic exploration, it has been seen that it is useful to perform appendectomy anyway, that leads to the disappearance of symptoms, which are probably due to inflammatory recurrent catarrhal phenomena of appendix in such patients, as it is demonstrated by the adhesions found at cecum-appendicular level.
From January 2011 to December 2013, 24 children with chronic recurrent right lower quadrant pain were subjected to diagnostic laparoscopy. Ages varied from 11 to 18 years (mean, 14 years). There were 6 males and 18 females. Laparoscopic findings included macroscopical signs of acute appendicitis in 15 patients; cecal adhesions in 20 patients, kink of the appendix in 3. The abdominal pain completely resolved in all the patients following laparoscopy.

KEY WORDS: Appendectomy, Laparoscopy, Right lower pain

Introduction

Abdominal pain is the most frequent cause of access to the emergency room, and often hospitalization, in paediatric patients. In more than half of the cases, in patients with suspected appendicitis, after a reasonable period of clinical observation, the syndrome resolves with conservative therapy and with the resignation of the little patient. Very often, however, there has been a succession of access to the hospital because of recurrent pain in the right iliac fossa; in collecting anamnesis, parents will relate recurrent episodes of pain syndromes, weekly or monthly, that are followed by hospitalization just in few cases. This "chronic" pain condition will inevitably lead to significant disruption in social, economic and psychological, as well as an emotional reaction on the part of the patient and his parents, who require a definitive resolution of this health condition.
On this prerequisites the decision to perform a laparoscopic diagnosis and / or operation of such a copious number of patients is based, certainly preferable to laparotomy for the undeniable potential of the first one to explore adequately the entire abdominal cavity with a minimally invasive approach.

Pervenuto in redazione Luglio 2014. Accettato per la pubblicazione Ottobre 2014.
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The question often arises from the decision to perform or not to appendectomy in case of "normal" evidence of the peritoneal cavity .
The value of laparoscopic exploration in those patients earlier undergone laparoscopic appendectomy in which local recurrent symptoms persist after exclusion of non-surgical intestinal pathologies is undisputed, instead.

Materials and Methods

Paediatric patients with recurrent pain in the right iliac quadrant which, although do not meet all the clinical criteria according to the Alvarado score, are admitted more than three times for clinical observation, describing recurrent pain, with intensity that would affect the common activities of daily life at least once a month were considered eligible for laparoscopic exploration.
After excluding other internal diseases that can cause a "false" acute surgical abdomen, it was decided to operate patients during hospitalization from the emergency department preferentially, therefore with continuous symptomatology, avoiding a scheduled admission with asymptomatic patient.
From January 2011 to December 2013, 24 children with chronic recurrent right lower quadrant pain were subjected to diagnostic laparoscopy. Ages varied from 11 to 18 years (mean, 14 years). There were 6 males and 18 females.
All patients had undergone blood tests and ultrasonography of the abdomen during the previous hospitalizations
Three patients (1 male and two females) were already undergone appendectomy.
In 10 patients ultrasound had shown signs of inflammation of the appendix, in the absence of clinical criteria that suggest surgical treatment in emergency.
In 3 patients second level outpatient instrumental tests (MRI, CT abdomen and pelvis) were carried out with negative results.
In 2 patients contrast medium radiographic examinations of the colorectal were performed with negative results.
In 3 patients endoscopic examinations (EGDS and colonoscopy) were performed with negative results.
All patients were subjected to T.U.O.L. (Trans Umbilical Open Laparoscopy) laparoscopic technique with a 10mm umbilical trocar, a second 10mm trocar to the left side, and a third 5mm trocar in the hypogastrium.
The three patients that were aleady undergone appendectomy were operated with three 5 mm laparoscopic accesses. The 30° laparoscopic optic was positioned at the level of the trocar in left flank. Bipolar forceps was used for adhesiolysis and cauterization of the meso-appendix. Laparoscopic appendectomy was performed in all the 21 patients and the cecal appendix was always pulled out with endo-bag through the umbilical access.
Laparoscopic findings included macroscopical signs of acute appendicitis in 15 patients; cecal adhesions in 20 patients, kink of the appendix in 3.
In 3 cases a very long appendix was found, along with meso and tending to volvulus on its mesenteric axis.
Genital diseases that could justify the painful recurrent symptoms were not found in any patient. Laparoscopic appendectomy was performed in all the patients.
Histological examination of the appendix demonstrated acute appendicitis in 5 patients, periappendicitis in 5 congested appendix in 10. Histologically normal appendix was reported in one patient. There was no reports of chronic appendicitis.
No cases were found of adenomesenteritis, macroscopically evident.
There were no operative complications.
Just one patient presented thoraco-abdominal pain and on right scapular region the two days after the operation, which was accentuated in orthostasis, by persistence of pneumoperitoneum because of failure of complete discharge of carbon dioxide after surgery.
About other patients, the post-operative pain, which lasted more than 24 hours, was greater for those who underwent lysis of adhesions between the parietal peritoneum and blind gut.
There was no mortality in our study. Duration of follow up was 6 months. There was a correlation between the recorded position of cecal appendix and recurrent pain. There was no association between postoperative pain scores and histopathology findings.
One patient with catarrhal appendicitis findings on pathological examination complained of persistent abdominal pain in the months after surgery, however describing a different location (heartburn), followed by detection of Helicobacter pylori gastritis.
The abdominal pain completely resolved in all the patients following laparoscopy.
Postoperative hospitalization ranged from 2 to 10 days.

Discussion

The recurrent/chronic abdominal pain is a common clinical problem in childhood and adolescence. It is estimated that in 90% of the cases approximately, an organic cause is not found, despite subjecting patients to clinical and instrumental exams seriated.
The right iliac fossa pain considers, as differential diagnosis, the acute appendicitis, primarily renal colic, a chronic inflammatory disease (terminal ileitis), distension of the blind in functional pathology of the colon, adnexal pathologies in the female.
After the clinical examination, the patient is hospitalized to undergo blood tests (including V.E.S. and P.C.R.), urinalysis, and abdominal sonography.
The most frequently criteria adopted to select patients eligible to surgery in urgency are the Alvarado Score and the M.A.N.T.R.E.L.S., which are based on scores calculated from the presence or absence of: migration of the pain, anorexia, nausea/vomiting, tenderness in the right

lower quadrant, rebound pain, elevation of temperature, leukocytosis, shift to the left. [1]

Today, great importance is given to the help offered by ultrasonography, thanks to the technological improvement of the devices used, more suited to the direct study of cecal appendix, in experienced hands.

Very often indication for surgery is not established, although an appendicular etiology of the syndrome has been diagnosed. In fact after few hours after onset of symptomatology, by keeping patient without food, with fluid and electrolyte replacement therapy and with an ice pack on the right iliac fossa, the regression of pain is attends.

In the past, the most common surgical philosophy was inclined to refer young patients to "preventive" appendectomy, even if clinical features of appendicitis were not egregious. Some authors even postulated the placebo effect of appendectomy.

Patients with continuous pain in the right iliac fossa, several times relapsed, in the absence of all the clinical criteria of acute appendicitis, and without diagnosis for organic pathology at instrumental tests already carried out, were subjected to diagnostic laparoscopy in emergency at our department.

Still, lysis of adhesions between blind gut and parietal peritoneum is certainly more complete and effective than lysis that would take place during open surgery. Moreover the latter would also be accountable for an higher rate of new post-surgical adhesions, especially among abdominal bowels and anterior abdominal wall [2,3].

Failure to recurrence of painful symptoms in patients undergoing adhesiolysis or appendectomy for macroscopic signs of acute appendicitis is clearly justifiable.

Instead we explain the disappearance of pain in patients without signs of abdominal pathologies ongoing at the time of laparoscopy, but undergone appendectomy however, with recurrent episodes of inflammation of the appendix catarrhal type. So it is useful to perform appendectomy during diagnostic laparoscopy, even in cases where we find an organ macroscopically normal (though of course there are other glaring organic causes that justify the chronic pain), assuming that the appendix will experience repeated acute catarrhal inflammatory phenomena [4-6].

Laparoscopic appendectomy has significant advantages in both acute and complicated appendicitis, especially in young women. In this way, we can diagnose pelvic disease that could be characterized by the same symptoms of acute appendicitis, then some authors suggest laparoscopic appendectomy even just to complete the diagnostic iter [7].

Laparoscopy demonstrated the elective procedure in urgency, permitting the diagnosis and the surgical treatment of acute abdomen with the post-operatory advantage of the technique [8,9].

Gorenstin in 1999 already envisaged the convenience of open elective appendectomy for chronic pain in the right lower quadrant from "colic" appendicular, referring to the applicant and temporary occlusion of the lumen of the appendix [10].

Roumen et al, in a randomized clinical trial, show that the elective appendectomy for chronic pain in the right iliac fossa, provides statistically significant results in terms of disappearance of painful symptoms in the postoperative period, even in the absence of a correlation with anatomo-pathological abnormal [11].

The advantage of associating appendectomy laparoscopic lysis of adhesions in the resolution of painful symptoms in cases of recurrent appendicular colic, is reported in a work of Gillick et al on a series of 103 consecutive patients with lower right quadrant pain [12].

Conclusions

Based on our experience and the comparison with the data in the scientific literature, we infer that laparoscopy for chronic abdominal pain in the right lower quadrant, with low morbidity index, allows us to identify an organic cause of pain in the majority of cases, identified by diagnostic imaging, and finally resolve the discomfort of chronic pain and continued use of hospital facilities.

It should be sieved naturally with experience and with clinical criterion decision to undergo surgery patients, on the basis of real potentially clinical benefit.

The appendectomy performed also on caecal appendices grossly non-pathological, it is a simple procedure and almost risk-free, and in our cases resolve the recurring pain.

The laparoscopic exploration in patients who have previously undergone appendectomy, allows for lysis of adhesions, with a lower occurrence of relapse, and a resolution of painful symptoms.

Riassunto

Secondo la letteratura scientifica, la laparoscopia quale ausilio nella diagnosi e terapia per il dolore cronico nel quadrante inferiore destro iliaca, emotivamente e socialmente debilitante, che non trova una risposta nel tradizionale iter clinico diagnostico-strumentale, mostra un innegabile vantaggio grazie alla sua mini-invasività, alla possibilità di una esplorazione metodica e approfondita di tutta la cavità addominale nei casi di dolore ricorrente. Nei casi in cui non venga individuata una patologia organica significativa tale da giustificare il dolore ricorrente in fossa iliaca destra, durante l'esplorazione laparoscopica, si è visto che è utile comunque effettuare l'appendicectomia, che porta alla scomparsa dei sintomi, che sono probabilmente dovuti a fenomeni infiammatori catarrali ricorrenti di appendice in tali pazienti, come è dimostrato dalle aderenze presenti a livello di cieco-appendicolare.

Dal Gennaio 2011 al Dicembre 2013, 24 bambini con dolore ricorrente a livello del quadrante addominale infe-

riore destro sono stati sottoposti a laparoscopia diagnostica. L'età era compresa tra 11 e 18 anni (media, 14 anni). Si trattava di 6 maschi e 18 femmine. In 15 pazienti sono stati eviedenziati segni macroscopici di appendicite acuta; aderenze cecali sono state riscontrate in 20 pazienti, una torsione dell'appendice è stata riscontrata in 3 pazienti. Il dolore addominale ricorrente è stato risolto definitivamente in tutti i pazienti.

References

1. Bond GR, Tully SB, Chan LS, Bradley RL: *Use of the MANTRELS score in childhood appendicitis: A prospective study of 187 children with abdominal pain*. Ann Emerg Med, 1990; 19(9):1014-18.

2. Teli B, Ravishankar N, Harish S, Vinayak CS: *Role of elective laparoscopic appendicectomy for chronic right lower quadrant pain*. Indian J Surg, 2013; 75(5):352-55.

3. Panchalingam L, Driver C, Mahomed AA: *Elective laparoscopic appendicectomy for chronic right iliac fossa pain in children.* J Laparoendosc Adv Surg Tech A, 2005; 15(2):186-89.

4. Thanapongsathron W, Kanjanabut B, Vaniyapong T, Thaworncharoen S: *Chronic right lower quadrant abdominal pain: Laparoscopic approac*h. J Med Assoc Thai, 2005; 88 (Suppl 1):S42-7.

5. Gustavo Stringel, MD, Stuart H. Berezin, MD, Howard E. Bostwick, MD, and Michael S, Halata MD: *Laparoscopy in the Management of Children with Chronic Recurrent Abdominal Pain*. JSLS. 1999; 3(3):215-19.

6. Kolts RL, Nelson RS, Park R, Heikenen J: *Exploratory laparoscopy for recurrent right lower quadrant pain in a pediatric population*. Pediatr Surg Int, 2006; 22(3):247-49.

7. Pezzolla A, Milella M, Lattarulo S, Barile G, Pascazio B, Ialongo P, Fabiano G, Palasciano N: *Laparoscopic appendectomy. Our experience.* Ann Ital Chir, 2012; 83(3):253-57.

8. Navarra G, Ascanelli S, Turini A, Carcoforo P, Tonini G, Pozza E: *Laparoscopic appendectomy versus open appendectomy in suspected acute appendicitis in female patients*. Ann Ital Chir, 2002; 73(1):59-63.

9. Catani M, De Milito R, Rattà G, Abati G, Chiaretti M, Rengo M: *Laparoscopy in an abdominal emergency: The diagnosis and therapy in 3 clinical cases of acute abdomen*. Ann Ital Chir, 1999; 70(2):265-8; discussion 268-69.

10. Gorenstin A, Serour F, Katz R, Usviatsov I: *Appendiceal colic in children: A true clinical entity?* J Am Coll Surg, 1996; 182(3):246-50.

11. Roumen RM, Groenendijk RP, Sloots CE, Duthoi KE, Scheltinga MR, Bruijninckx CM: *Randomized clinical trial evaluating elective laparoscopic appendicectomy for chronic right lower-quadrant pain.* Br J Surg, 2008; 95(2):169-74.

12. Gillick J, Mohanan N, Das L, Puri P: *Laparoscopic appendectomy after conservative management of appendix mass.* Pediatr Surg IInt, 2008; 24(3):299-301.