

Abdominal Pain Patient Referrals to Emergency Surgical Service: Appropriateness of Diagnosis and Attitudes of General Practitioners

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ABSTRACT

This study evaluate the need for general practitioners referrals and self referrals of acute abdominal pain patients to emergency surgical service, the appropriateness of GP referral diagnosis and their attitudes dealing with abdominal pain. In three months period all acute abdominal pain patient referrals to our hospital emergency surgical service were audited. Data on final diagnosis, surgical treatment, admission to hospital and surgery performance were recorded. Self referral or GP referral, referring GP diagnosis, referral letters indicating presenting complaint or history, axillar and rectal temperature measurement, laboratory checking and abdominal radiography checking by GP were recorded as well. Also, GPs examination details as palpation, auscultation and digit-rectal checking were recorded. We calculated sensitivity, specificity, positive and negative predictive value (PV) for referring diagnosis. Self referrals and GP referrals differences were evaluated. During the study 318 patients were admitted. A total of 163 (51.25%) referrals were deemed inappropriate; 102 (52.6% of GP referrals) and 61 (49.2% of self referred) ($p < 0.05$). There were no differences in general treatment, hospital admission and operative treatment in self referred and GP referred groups ($p < 0.05$ for all three categories). Sensitivity, specificity, positive and negative predictive values for most frequent GP referral diagnoses were: abdominal colic/abdomen in observation 0.78; 0.66; 0.74; 0.70; acute appendicitis 0.37; 0.92; 0.44; 0.90; acute abdomen/peritonitis 0.30; 0.97; 0.54; 0.92; constipation 0.95; 0.98; 0.85; 0.99; and ileus 0.83; 0.97; 0.50; 0.99. Data on GP including clinical examination, patient history and running basic diagnostics were poor. Our results suggest that a general agreement within the profession about what constitutes a »necessary« hospital referral is necessary. GP consultation quality must be improved by booking more time per patient and by giving more medical/technical attention to patients.

Key words: abdominal pain, general practitioner (GP), hospital referral

Introduction

Abdominal pain is one of the patient most common complaints. Most of such complaints are managed without referrals or further investigations in primary health care¹. Since one of the functions of primary health care is screening of emergencies patients needing hospital care are referred to hospitals emergency services dealing with self referred abdominal pain patients as well².

In recent years emergency surgical services are facing increasing number of abdominal pain patients self referrals or most commonly primary health care physician referrals³. Although availability of general practitioners (GP) has been improved in recent years, previous studies suggest that only 3–16% of patients attempt to contact

their GP before attending the emergency departments in primary health care or emergency surgical service in hospitals^{4,5}. Factors influencing observed increase might be ageing of the population, new technology leading to routine treatment of conditions previously not regarded as treatable, social changes leading to loss of home support and changes in public attitudes. Also we must not forget that abdominal pain of uncertain etiology is a common clinical problem often leading to failure to make the diagnosis especially when based on historical and physical examination findings only.

The resulting pressure on emergency surgical service staff and resources can effect elective surgical work and

bring substantial expenditure for the hospital service, making this a matter of concern for managers, clinicians and potential patients^{2,6}.

Only few studies demonstrate significant number of general practitioners abdominal pain patient referrals to emergency surgical service to be inappropriate^{6,7}. There are no such studies in Bosnia and Herzegovina, a country still running the primary health care reform after the war in former Yugoslavia.

Therefore we decided to evaluate the need for abdominal pain patient referrals to emergency surgical service, the appropriateness of GP referral diagnosis and their attitudes dealing with abdominal pain in newly reformed primary health care system of Bosnia and Herzegovina.

Material and Methods

From October 1 2007 to December 31 2007 all abdominal pain patients' referrals to University Clinical Hospital Mostar emergency surgical service were audited prospectively. Children under the age of 14 were referred to paediatric surgery department, so were not included in the study. The main reason for not including children under the age of 14 in the study was that they were mostly referred to surgery by paediatrician and not by GP. Also children cognitive skills and cooperation to the primary health care doctor during the clinical examination are inferior to those of adults, so we believe that this group should be investigated separately.

Patients general data, final diagnosis, surgical treatment, hospitalisation to general surgical beds and surgery performance data were recorded from emergency surgical service records, disease histories and surgery performance records. Data on: self referral or GP referral, referring diagnosis, referral letters indicating presenting complaint or history, axillar and rectal temperature measurement, laboratory (blood count, urine microscopy) and abdominal radiography checking by primary health care were recorded as well. Also, patients were asked about GPs examination details: palpation, auscultation and digit-rectal checking.

Investigations were requested by the emergency surgical service staff. The audit process did not influence the routine patient management, treatment or admission.

We classified GP referring diagnosis in six groups: abdominal colic or abdomen in observation, acute appendicitis, acute abdomen or diffuse peritonitis, ileus, constipation and others (pancreatitis, cholecystitis, gastrointestinal bleeding, incarcerated hernia, etc). The sensitivity, specificity, positive and negative predictive value (PV) for referring diagnosis were calculated. Positive PV of the GPs referring diagnosis is the probability that a patient has the disease when the GP suggests the diagnosis. Negative PV of the GPs diagnosis is the probability that a patient does not have the disease when the GP does not suggest the diagnosis

Self referrals and GP referrals differences were evaluated. Inter-group differences were evaluated using χ^2 -test

with a level of 5% considered to be statistically significant. All the statistical analyses were carried out using SPSS (version 17.0) for Windows.

Results

Three hundred eighteen patients were admitted to our emergency surgical service as urgent referrals during the three months study. 150 (47.2%) of these were male and 168 (52.8%) female. Medium age was 47.5 ± 20.8 years and age range 14 to 92 years.

One hundred ninety four (61%) patients were referred from GP and 124 (39%) were self referred.

A total of 163 (51.25%) referrals of 318 were deemed inappropriate; 102 (52.6% of GP referrals) patients referred by GP and 61 (49.2% of self referred) self referred, which is not statistically significant ($p < 0.05$). Of these 163 patients 24 (14.73%) were referred to other specialties (7 to gynaecology, 12 to internal medicine and 5 to urology), 41 (25.15%) required outpatient routine appointment and 98 (60.12%) needed no surgical opinion or advice.

Evaluating the appropriateness of abdominal pain GP and self referrals to emergency surgical service we recorded that 50 (25.77%) GP referred and 33 (26.61%) self referred patients needed some kind of treatment in emergency surgical service (enema, etc.). Some 42 (21.65%) GP referred and 30 (24.19%) self referred patients were admitted to general surgical beds out of which 27 (13.91%) GP referred and 15 (12.10%) self referred were operated (Figure 1). There is no statistical significance in treatment of GP and self referred patients ($\chi^2 = 1.333$; $df = 3$; $p < 0.05$ for all three categories).

Sensitivity, specificity, positive and negative predictive values for most frequent GP referral diagnoses were: abdominal colic/abdomen in observation 0.78; 0.66; 0.74; 0.70; acute appendicitis 0.37; 0.92; 0.44; 0.90; acute abdomen/peritonitis 0.30; 0.97; 0.54; 0.92; constipation 0.95; 0.98; 0.85; 0.99; and ileus 0.83; 0.97; 0.50; 0.99 (Table 1). Table 2 shows the relation between GPs' referral diagnoses and final diagnoses. As an example, GPs suspected 30 acute abdominal pain patients suffering from acute appendicitis, but only 11 cases were diagnosed as such thorough surgical investigation.

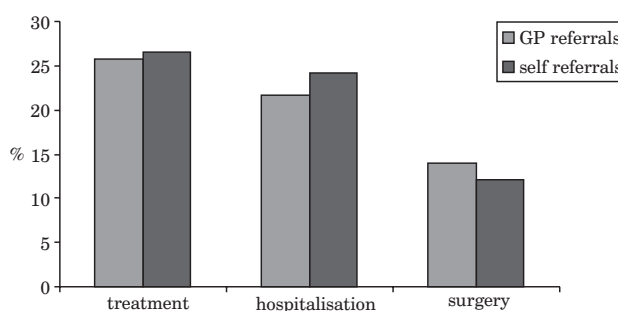


Fig. 1. Comparison of gp and self referred acute abdominal pain patients treatment, hospitalization and surgery.

TABLE 1
SENSITIVITY, SPECIFICITY, POSITIVE AND NEGATIVE PREDICTIVE VALUES OF GP MOST FREQUENT ACUTE ABDOMINAL PAIN REFERRAL DIAGNOSIS

GP diagnosis	sensitivity	specificity	pozitivePV	negative PV
Abdominal colic, abdomen in observation	0.78	0.66	0.74	0.70
Acute appendicitis	0.37	0.92	0.44	0.90
Acute abdomen, peritonitis	0.30	0.97	0.54	0.92
Constipation	0.95	0.98	0.85	0.99
Ileus	0.83	0.97	0.50	0.99

Investigating the GP attitudes dealing with acute abdominal pain patients we noted GP physical examination, running basic diagnostic procedures Distribution of GPs' referral diagnoses and final diagnoses. GPs' referral diagnosis and referral letters being poor. From 194 patients referred to emergency surgical service abdominal palpation was performed on 176 (90.72%) but auscultation on 34 (17.52%) patients only. No digit-rectal checking was performed. Basic laboratory checking (blood count and urine microscopy) were performed on 24 (12.73%) patients and abdominal radiography on 8 (4.12%) patients. Axillar and rectal temperature were measured on 12 (6.19%) patients. Other than referral diagnosis only

17 (8.76%) referral letters were indicating patient present complaint or disease history (Table 3).

Discussion

Primary health care in former Yugoslavia was mainly managed in large outpatient clinics⁸. Most frequently from such clinics patients were referred to secondary health care level in the hospitals^{9,10}. After the war in Bosnia and Herzegovina with consultation of World Health Organization primary health care reform project was implemented and institution of family doctor – general practitioner was introduced. In these recent years phase

TABLE 2
DISTRIBUTION OF GPs' REFERRAL DIAGNOSES AND FINAL DIAGNOSES

GPs' diagnoses	Final diagnoses						
	AC/AO	AAP	AA/P	CO	IL	MS	
Abdominal colic (AC)							
Abdomen in observation (AO)	108	84	6	2	3	4	9
Acute appendicitis (AAP)	30	16	11	3	0	0	0
Acute abdomen (AA)							
Peritonitis (P)	23	10	6	7	0	0	0
Constipation (CO)	18	1	0	0	17	0	0
Ileus (IL)	6	1	0	0	0	5	0
Miscellaneous (MS)	9	1	2	1	0	1	4
Total	194	113	25	13	20	10	13

*GPs' – referral diagnosis and corresponding correct final diagnosis are given in boldface

TABLE 3
GPs ACUTE ABDOMINAL PAIN PATIENT EXAMINATION AND RUNNING DIAGNOSTIC PROCEDURES DETAILS AND ATTITUDES

GP referrals to emergency surgical service	No	%
Total	194	100
Palpation	176	90.72
Auscultation	34	17.52
Digito-rectal checking	0	0
Laboratory	24	12.37
Abdominal radiography	8	4.12
Axillar and rectal temperature measurement	12	6.19
Presenting complaint or history indicated	17	8.76

of family doctors education and equipping of family medicine facilities took place¹¹. The new system also faced and fight bad heritage of pre-war primary health care system. Today the new system is functioning with still unproven efficiency.

The evaluation and treatment of acute abdominal pain patients referred acutely by GPs account participate significantly the workload of the acute surgical service⁶. In primary care-based health systems, it is important for GPs accurately to assess actually ill patients and then make appropriate hospital referrals¹². The effectiveness of this process is unknown; however this study supports previous work in suggesting that almost 40% of abdominal pain patients sent to hospital can be discharged immediately². Only about quarter of GP referred abdominal pain patients required some kind of treatment in emergency surgical service, another quarter were admitted to general surgical beds and only about 12 percent were operated. Also, there were no significant differences in treatment of patients referred by GP and those self referred. There can be many reasons for this. Some studies suggest GPs implementation of defensive medicine practice referring patients with unclear diagnosis and patients with difficult social or other problems to hospital even when the clinical problem did not merit admission^{13,14}. It has been also suggested that the GP may have a greater understanding of the suitability of available alternative modes of care which is equally probable explanation for GPs high referral rates to hospital surgical services¹⁵. On the other hand relatively small combined influences of the time of day and the social background to the hospital referral in some studies suggest that these factors do not play role in determining emergency referral^{4,16}. Large variations of the referral rates between the individual GP were demonstrated and to large extent these variations remained unexplained by referring physicians age, sex or workload¹⁷. Absence/presence of local specialist did not significantly influence the proportion of surgical problems referred by GP to hospital emergency surgical service¹⁸. Also there are studies demonstrating no general profile difference of patients contacting a general practice cooperative or accident and emergency department out of hours¹⁹.

One of the aims of our study was to evaluate the ability of GPs to diagnose the causes of acute abdominal pain. Investigating this ability we calculated sensitivity, specificity, positive and negative predictive values for most frequent GP referral diagnoses. Sensitivity and positive PV were low for acute appendicitis and acute abdomen/peritonitis which is of serious concern because of diagnoses potential life threatening nature. On the other hand, negative PV and specificity were high, which can be explained by the low occurrence of these diseases among patients in primary care. All four parameters were high for constipation and ileus, since these diagnoses were easily worked out based on patient given data and for ileus highly sensitive abdominal radiography^{20,21}.

Abdominal colic was most frequent GP diagnosis based on acute abdominal pain. Sensitivity, specificity, positive and negative predictive values for abdominal colic was of medium value, but the rate of these patients was highest among those regarded as inappropriate referrals.

Generally, the overall clinical significance of abdominal pain is unsatisfactory, and the symptom alone does not allow a correct diagnosis²². A prerequisite for management of this problem is a screening procedure thorough initial history and physical examination. Further restrictive diagnostic strategy is legitimated²³. In our study GPs performance of screening thorough detailed physical examination demonstrated to be surprisingly poor. Also, hardly any further diagnostic procedure was performed. Even in some studies documented that explicit documentation of GP assessment prior to referral may have a significant impact on how cases might be managed in secondary care^{24,25} in our study other than referral diagnosis only 8.76% referral letters were indicating patient present complaint or disease history. These findings correspond to high inadequate referral rates.

Since the primary health care reform project in Bosnia and Herzegovina is not yet fully implemented, due to lack of finances the equipping of GP offices, as well as their education is not completed, especially in rural areas, which can be partially one of the reasons for GP lack of diagnostic procedures and poor initial history and physical examination screening procedure performance.

Other than activities in their family doctors offices most GPs are obligated for duties in primary health care emergency service, again especially in rural areas. Since there are mostly the same doctors dealing with abdominal pain in both services our investigation about GPs attitudes to abdominal pain management was not influenced.

Finally we do not know whether there is general agreement within the profession about what constitutes a »necessary« hospital referral but such a consensus is clearly necessary to allow rational solution for the acute abdominal pain surgical hospital referrals. Although, there are studies demonstrating that application of locally established referral guidelines would be unlikely to reduce the number of patients referred to hospital²⁶, we strongly believe that only exchange of experiences and general consensus between GPs and surgeons can decrease the number of GPs inappropriate acute abdominal pain patient referrals to hospital. It is hoped that such consensus groups can agree guidelines on the need for hospital referral in various circumstances and to identify the »triggers« which cause experienced clinicians to feel that hospital referral is justified. GP consultation quality must also be improved by booking more time per patient and by giving more medical/technical attention especially to children, female and elder patients suffering abdominal pain. Comprehensive investigation about GPs facilities, education level and skills might also bring some answers and improve quality of service.

REFERENCES

1. HEIKKINEN M, PIKKARAINEN P, ESKELINEN M, JULKUNEN R, Scand J Prim Health Care, 18 (2000) 99. — 2. DOOKERAN KA, BAIN I, MOSHAKIS V, Br J Surg, 83 (1996) 1544. — 3. CAMPBELL WB, LEE EJ, VAN DE SIJPE K, GOODING J, COOPER MJ, Ann R Coll Surg Engl, 84 (2002) 273. — 4. ELSHOVE-BOLK J, MENCL F, VAN RIJSWIJCK BT, WEISS IM, SIMONS MP, VAN VUGT AB, Eur J Emerg Med, 13 (2006) 325. — 5. HULL S, JONES IR, MOSER K, FISHER J, Br J Gen Pract, 48 (1998) 1575. — 6. DOOKERAN KA, THOMPSON MM, LLOYD DM, EVERSON NW, Br J Surg, 79 (1992) 430. — 7. DENMAN-JOHNSON M, BINGHAM P, GEORGE S, J Epidemiol Community Health, 51 (1997) 386. — 8. ALBREHT T, DELNOJ DM, KLAZINGA N, Eur J Public Health, 16 (2006) 238. — 9. BUNTA S, Vojnosanit Pregl, 28 (1971) 89. — 10. GRAHOVAC V, GAVAZZI B, J R Coll Gen Pract, 16 (1968) 220. — 11. ATUN RA, KYRATSIS I, JELIĆ G, RADOŠ-MALIĆBEGOVIĆ D, GUROL-URGANCI I, Health Policy Plan, 22 (2007) 28. — 12. BREKKE KR, NUSCHELER R, STRAUME OR, J Health Econ, 26 (2007) 149. — 13. ARMSTRONG D, Soc Sci Med, 55 (2002) 1771. — 14. SUMMERTON N, Br J Gen Pract, 50 (2000) 565. — 15. POYNTON L, DOWELL A, DEW K, EGAN T, N Z Med J, 15 (2006) 119. — 16. HULL S, JONES IR, MOSER K, FISHER J, Br J Gen Pract, 48 (1998) 1575. — 17. HAIKIO JP, LINDEN K, KVIST M, Scand J Prim Health Care, 13 (1995) 287. — 18. GRUEN RL, KNOX S, BRITT H, Med J Aust, 177 (2002) 111. — 19. GIESEN P, FRANSSEN E, MOKKINK H, VAN DEN BOSCH W, VAN VUGT A, GROL R, Emerg Med J, 23 (2006) 731. — 20. LASSANDRO F, GAGLIARDI N, SCUDERI M, PINTO A, GATTA G, MAZZEO R, Eur J Radiol, 50 (2004) 23. — 21. RIPOLES T, MIGUEL-DASIT A, ERRANDO J, MOROTE V, GOMEZ-ABRIL SA, RICHART J, Abdom Imaging, 26 (2001) 401. — 22. GRAFF L, RUSSELL J, SEASHORE J, TATE J, ELWELL A, PRETE M, WERDMANN M, MAAG R, KRIVENKO C, RADFORD M, Acad Emerg Med, 7 (11) (2000) 1244. — 23. LONGSTRETH GF, DROSSMAN DA, Clin Gastroenterol Hepatol, 3 (2005) 397. — 24. RAMAKHA S, GILES A, Aust Fam Physician, 30 (2001) 395. — 25. JIWA M, WALTERS S, MATHERS N, Br J Gen Pract, 54 (2004) 123. — 26. FERTIG A, ROLAND M, KING H, MOORE T, BMJ, 307 (1993) 1467.

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**PACIJENTI S BOLOM U TRBUHU U HITNOJ KIRURŠKOJ SLUŽBI:
TOČNOST DIJAGNOZA I NAVIKE LIJEČNIKA IZ PRIMARNE ZDRAVSTVE ZAŠTITE**

SAŽETAK

Ovim istraživanjem se evaluira opravdanost samodolaska ili upućivanja pacijenata sa akutnim abdominalnim bolom u hitnu kiruršku službu od strane liječnika obiteljske medicine, točnost njihovih uputnih dijagnoza i njihov odnos i način rada sa ovim pacijentima. Registrirali smo sve pacijente pregledane u hitnoj kirurškoj službi naše bolnice zbog akutnog abdominalnog bola u tromjesečnom razdoblju. Izdvojili smo podatke o njihovim ishodnim dijagnozama, prijemima u bolnicu i kirurškom tretmanu. Također smo bilježili: jesu li se pacijenti javljali sami ili su upućeni iz obiteljske medicine, njihove uputne dijagnoze, podatke o povijesti bolesti ili simptomima ukoliko su navedeni na uputnicama, je li im mjerena aksilarna ili rektalna temperatura, te jesu li učinjene osnovne laboratorijske i radiološke pretrage. Iz razgovora s pacijentima smo registrirali i podatke o palpaciji i auskultaciji abdomena te digitorektalnim pregledima prilikom fizikalnih pregleda u obiteljskoj medicini. Izračunali smo senzitivnost, specifičnost, pozitivnu i negativnu prediktivnu vrijednost (PV) za uputne dijagnoze. Posebno su evaluirani pacijenti koji su se javili sami u odnosu na one upućene iz obiteljske medicine. Tijekom istraživanja obrađeno je 318 pacijenata. Za ukupno 163 (51,25%) pacijenta dolazak u hitnu kiruršku službu je bio nepotreban; 102 (52,6% upućena iz obiteljske medicine) i 61 (49,2% koji su se javili sami) ($p < 0,05$). Razlika u općem tretmanu, prijemima u bolnicu i operacijskom tretmanu između dvaju skupina nije bilo ($p < 0,05$ za sve tri kategorije). Senzitivnost, specifičnost, pozitivna i negativna prediktivna vrijednost za najčešće uputne dijagnoze su bile: abdominalne kolike/abdomen in obs 0,78; 0,66; 0,74; 0,70; akutni apendicitis 0,37; 0,92; 0,44; 0,90; akutni abdomen/peritonitis 0,30; 0,97; 0,54; 0,92; opstipacija 0,95; 0,98; 0,85; 0,99; i ileus 0,83; 0,97; 0,50; 0,99. Podaci o fizikalnom pregledu, bilježenju podataka o povijesti bolesti i simptomima, te obavljanje osnovnih laboratorijskih i radioloških pretraga u obiteljskoj medicini se pokazalo manjkavim. Naši rezultati ukazuju na potrebu općeg konsenzusa unutar profesije o kriterijima upućivanja pacijenata u hitnu kiruršku službu. Kvalitet pregleda u obiteljskoj medicini mora biti poboljšana posvećivanjem više vremena i pažnje pacijentima, te propedeutici njihovog pregleda.