

Truncal neuralgia in diabetic patients: An ignored cause of abdominal pain

Mohamed Lotfy, Hazem N. Ashri, Mostafa M. Khairy

ABSTRACT

Aims: We aim to study diabetic patients, with abdominal pain and neuralgia somewhere else in their bodies, and search for the relation between their abdominal pain and the lower intercostal neuralgia (T7–11 and subcostal). **Methods:** Between July 2016 and February 2017 this study was carried out in the emergency department, Zagazig University Hospital. Twenty-three patients were subjected to this study and divided into (group A = 15 patients had right upper abdominal pain) and (group B = 8 patients had right lower abdominal pain). This grouping was not created for comparative reasons, it was done because we were studying the abdominal pain in two different anatomical regions. **Results:** In group A, Carnett's sign was positive in 13 patients and equivocal in two patients (these two patients were operated for cholecystectomy). After strict blood glucose control and starting the neuropathy treatment 13 patients' symptoms improved. The other two patients developed pyrexia, leukocytosis and high liver enzymes and the diagnosis of acalculous cholecystitis was established. Patients stayed in the hospital for four days (mean) (range 3–6 days). In group B, Carnett's sign was positive in seven patients and equivocal in one patient (operated for appendectomy). After strict blood glucose control and starting the neuropathy treatment

seven patients' symptoms improved and pain diminished within the 1st 48 hours of admission. Patients stayed in the hospital for three days (mean) (range 2–4 days). **Conclusion:** Truncal neuralgia is a probable cause of abdominal pain especially in diabetics suffering from polyneuropathy somewhere else in their bodies. Truncal neuralgia should be put in the surgeon's mind when managing any diabetic patient with abdominal pain of unrevealed aetiology by the usually used investigations.

Keywords: Abdominal pain, Diabetic, Truncal neuralgia

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INTRODUCTION

Intercostal neuralgia is defined as a neuropathic state affecting the intercostal nerves, presenting as a strong pain. It may be shooting, sharp, or of burning quality. The pain is steady and may involve any of the intercostal nerves and the subcostal nerve [1, 2].

Intercostal neuralgia is caused by a diversity of reasons such as diabetes mellitus, nerve entrapment, iatrogenic neuroma, traumatic, persistent nerve irritation and herpes zoster [1].

Intercostal neuralgia is common in diabetes mellitus patients. It is one of the types of peripheral neuropathies linked to diabetes mellitus. It is present as a localized abdominal or chest pain, which may mimic a referred pain from the intra-abdominal or intrathoracic organs. When it is ignored as a cause of pain in such regions it may lead to do extensive and unneeded clinical investigations and surgical procedures [3].

Most clinicians hardly ever think about the possibility of abdominal tenderness and pain being situated in the abdominal wall itself with the result that a very common parietal affection by intercostal neuralgia is incorrectly diagnosed as an intra-abdominal, genitourinary or pelvic pathology [4].

In this study, we aim to study diabetic patients, with abdominal pain and neuralgia somewhere else in their bodies, and search for the relation between their abdominal pain and lower intercostal neuralgia (T7–11 and subcostal).

MATERIALS AND METHODS

Between July 2016 and February 2017, this study was carried out in the emergency department, Zagazig University Hospital. Twenty-three patients were subjected to this study and were divided into two groups (group A = 15 patients) and (group B = 8 patients). This grouping was not created for comparative reasons, it was created because we were studying the abdominal pain in 2 different anatomical regions.

Inclusion criteria

- Diabetic patients with evidence of peripheral neuropathy by history and clinical examination.
- Right upper abdominal pain with no gallbladder stones and diagnosed as acalculous cholecystitis by ultrasound (group A).
- Right lower abdominal pain with no evidence of acute appendicitis or any other pathology by ultrasound (group B).

Patients of both groups were admitted under observation after being subjected to full detailed:

- History taking
- General examination
- Local examination:

Group A patients had tenderness in the right hypochondrium

Group B patients had tenderness in the right iliac fossa
Carnett's sign was examined in both groups and repeated every six hours.

- Laboratory investigations: CBC, C-reactive protein, fasting blood sugar, blood glucose level six hourly and glycosylated hemoglobin for patients in both groups and liver function tests for patients in group A

- In group B, CT was done to exclude any pelvic-abdominal pathology
- Internal medicine consultation for strict control of blood glucose and for treatment of neuralgia (Pregabalin® 300 mg/day and topical NSAID, capsaicin cream)
- All patients were kept NPO for 24 hours
- If the pain was reduced or disappeared, the patient resumed his full regular diet gradually and was discharged and followed up in the OPD on weekly basis for one month

Carnett's* sign [4]: On contracting the muscles of the abdominal wall, tenderness on palpation remains or even increased in case of parietal cause of the abdominal pain (positive sign) but if pain is due to visceral pathology tenderness will disappear on palpation with the abdominal wall contracted (negative sign).

RESULTS

In group A, Carnett's sign was positive in 13 patients and was equivocal in two patients (these two were operated for cholecystectomy). After strict glyceemic control and starting the neuropathy treatment 13 patients' symptoms were improved and the pain diminished markedly within the admission period. The other two patients (with equivocal Carnett's sign) developed pyrexia, leukocytosis and high liver enzymes and the diagnosis of acalculous cholecystitis was established then their gallbladders were removed by the laparoscope. Patients stayed in the hospital for four days (mean) (range 3–6 days) Table 1.

In group B, Carnett's sign was positive in seven patients and was equivocal in one patient (operated for appendectomy). After strict glyceemic control and starting the neuropathy treatment seven patients' symptoms improved and the pain diminished markedly within the 1st 48 hours of admission. The patient (with equivocal Carnett's sign), his pain did not improve and even became worse and developed increased total leukocyte count and the diagnosis of acute appendicitis was confirmed and he had his appendix removed by the laparoscope. Patients stayed in the hospital for three days (mean) (range 2–4 days) Table 1.

Table 1: Gathered data during managing both groups

	Group A	Group B
Positive Carnett's sign	13 out of 15	7 out of 8
Glycosylated Hb level on admission (g/dl)	mean = 7.85 (range 7.5–8.9)	mean = 8.2 (range 7.5–9.1)
Hospital stay	mean = 4 days (range 3–6 days)	mean = 3 days (range 2–4 days)
Number of operated patients	2 out of 15 patients	1 out of 8 patients

DISCUSSION

Neuropathy is a frequent finding in diabetic patients. It involves numerous neurological systems resulting in many symptoms [5]. Truncal neuralgia is one of the types of neuropathies connected to diabetes mellitus. It presents as localized abdominal or chest pain, which may be mistaken for referred pain from the intra-abdominal or intra-thoracic organs [6] and if surgeons missed this possibility they will do unnecessary and extensive investigations and operations.

Truncal neurologic pain may be continuous as to be present every minute for weeks, months or years, or it may occur as discontinuous attacks which may last for hours or days with periods free of pain like attacks of biliary colic and attacks of grumbling appendicitis [4].

As a particular syndrome, truncal neuralgia is rarely described outside of diabetes mellitus. Herpes zoster infection nerve entrapment, iatrogenic neuroma, traumatic and persistent nerve irritation also may be causes of such condition [5]. However in this study, we put spot light on diabetic truncal neuralgia.

Several cases of truncal neuralgia in diabetic patients had been reported previously. In these reports, most patients were males with a diabetes mellitus of duration more than two years, and the neuropathy had primarily been unilateral [7]. However in our study, patients were mainly females (female : male = 14:9) and duration of diabetes was 13 years (mean) and ranged (10–15 years) Table 2.

Carnett’s sign [4] was positive in thirteen patients out of fifteen patients in group A and positive in seven patients out of eight in group B. This sign was equivocal (sometimes positive and sometimes negative in the same patient) in three patients in both groups. We believe that every case with abdominal pain should be tested for Carnett’s sign to differentiate between visceral pathology and truncal neuralgia as a cause of this pain.

In group A, patients were diagnosed before admission as having acalculous cholecystitis, merely because of tender probe sign and concentrated biles as seen by ultrasonography. We admitted them under observation for the possibility of truncal neuralgia as the cause of their right hypochondrial pain. Thirteen out of the fifteen

patients actually had their pain markedly reduced or even disappeared by strict control of blood glucose level and by receiving the treatment of neuralgia (Pregabalin® 300 mg/day and topical NSAID, capsaicin cream). Sun et al. reported successful management of truncal neuralgia with the same regimen [7].

In group B, patients were admitted under observation for the possibility of acute appendicitis or any pelvic pathology giving rise to this type of pain and to study the possibility of truncal neuralgia as the cause of this pain. Seven patients out of eight, had their pain markedly decreased. Only one patient in this group, his pain was proved to be due to acute appendicitis and had his appendix removed laparoscopically. In 1926, Carnett in his study discussed truncal neuralgia affecting T11, T12 and L1 nerves as a probable cause of the right lower abdominal pain mimicking acute appendicitis [4].

CONCLUSION

In conclusion, truncal neuralgia is a probable cause of abdominal pain especially in diabetics suffering from polyneuropathy elsewhere in their bodies. Truncal neuralgia should be put in the surgeon’s mind when managing any diabetic patient with abdominal pain of unrevealed aetiology by the usually used investigations. Carnett’s sign is a very reliable test to differentiate between the visceral and the parietal cause of abdominal pain.

Author Contributions

Mohamed Lotfy – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Hazem N. Ashry – Substantial contributions to conception and design, Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Mostafa M. Khairy – Substantial contributions to conception and design, Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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Table 2: History gathered data

Age	45–65 years (Average = 58)		
Sex	Male: Female	Group A	Group B
		1:2	1:1
Years since beginning of diabetes	10–15 years (mean = 13)		
Duration of abdominal pain	Group A	Group B	
	2–6 weeks (mean =4 weeks)	1–3 days (mean = 1. 6 days)	

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