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SIGNIFICANT INCIDENCE OF URINARY TUBERCULOSIS IN PATIENTS WITH PERSISTENT NON-SPECIFIC URINARY TRACT INFECTION (A CLINICAL AND BACTERIOLOGICAL STUDY)

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نسبة بينية من حالات تدرن المسالك البولية بين مرضى يعانون من خمج المسالك البولية غير النوعي والدائم

الخلاصة :

خلال سنة واحدة (١٩٨٨) ، خضع للدراسة هذه ١٠١ مريضا (٢٨ ذكرا و ٧٣ انثى) من منطقة الموصل ، حيث كانوا يعانون من خمج المسالك البولية المزمن لسنة واحدة على الاقل ، خضعوا جميعا للفحوصات مختلفة ، الغرض منها التحري عن تدرن المسالك البولية .

تم فحص رواسب نماذج الادرار التي جمعت خلال ٢٤ ساعة وتضمنت نماذج مبكرة لصباحين متتاليين ، للتحري عن عصيات التدرن ، بطريقة الفحص المباشر باستخدام صبغة زيل – نلسن ، وزرعها على وسط لوفنشتاين – جنسن ./او في وسط سلا كما شملت هذه الفحوصات ايضا مجموعة ضابطة متكونة من ٢٢ شخصا (٩ ذكور و ١٣ انثى) لا يعانون من خمج المسالك البولية المزمن .

اظهرت الدراسة حدوث نسبة عامة (٣٠٫٦٩٪) من تدرن المسالك البولية بين مجموعة مرضى المسالك البولية المزمن في الوقت الذي لم تظهر اي نتيجة موجبة لعصيات التدرن بين افراد المجموعة الضابطة ، لا بالفحص المباشر ولا بالزرع .

تمت مناقشة نتائج الفحوصات البكتريولوجية ونتائج الفحوصات الاخرى ايضا .

SUMMARY :

During one year (1988), 101 adult patients (28 males and 73) females from Mosul area, suffering from chronic non-specific urinary tract infection (Chr. UTI) for more than one year inspite of repeated treatments, were subjected to a variety of investigations, to reveal the presence of concealed urinary tuberculosis. Sediments of 2-hours urine samples including two early mornings, were examined directly by Zeihl-Neelsen stain and by culture, using Lowenstein-Jensen and/or Sula media. The same urine examinations were carried out on a control group consisting of 22 adult persons (9 males and 13 females) who were not suffering from chronic UTI.

The study revealed positive results for AFB in 31 cases (30.69%) either by direct microscopy or culture. None of the control

group showed any positive results.

INTRODUCTION :

Although the incidence of pulmonary tuberculosis has dramatically decreased with the introduction of effective chemotherapeutic agents however, the incidence of genitourinary tuberculosis has not paralleled this decline[1]. It has remained constant in United State[2] and Scandinavia[3]. In Eastern Europe Countries and USSR[4] there has been a slight decrease in the incidence of genitourinary tuberculosis, while the Japanese incidence showed an early fall from 3.7 percent to 1.85 percent[5]. In Egypt[6] an incidence of 16.3% among 92 patients with chronic UTI was found through one year.

In Mosul City patients suffering from chronic UTI with frequent recurrences of symptoms in spite of repeated courses of treatment, have raised the suspicion of underlying urinary tuberculosis and behooved us to do this work to reveal a masked presence of T.B. infection in their urine.

PATIENTS AND METHODS :

Patients : this study was carried out during the year of 1988, on 101 patients (28 males and 73 females) from Mosul area ranging in age between 13 and 73 years (mean of 40.1 ± 15.4) (Table 1). The patients were suffering from chronic UTI and were presented with frequent recurrences of symptoms mainly loin pain, frequency, dysuria and few of them with haematuria. The duration of symptoms was more than one year for most of them in spite of repeated treatments.

Methods : a full medical history was taken from all patients who were subjected as well to a complete physical examination and the following investigations were done : General urine examination.

Culture and sensitivity of urine for bacteria other than AFB.

Complete blood picture (CBP) and ESR.

Renal function tests (blood urea, serum creatinine and serum electrolytes). Chest X-rays and Venoas Urography (IVU).

percutaneous renal biopsy (PRB) for only 3 patients with pure haematuria. Urine examination for AFB, sediments of 24-hours urin-esamples including two early mornings, were examined after centrifugation, directly by Zeihl-Neelsen stain and by culture, using Lowenstien-Jensen (L-J) and/or Sula media[7,8]. The same methods of bacteriological investigations were applied to a control group comprising 22 persons (9 males and 13 females) ranging in age between 13 and 75 years (mean of 52±17.4). They were neither suffering from chronic UTI nor tuberculosis of any sort.

RESULTS :

Out of 101 patients, 31 (30.69%) showed AFB in their urine either by direct staining or by culture. None of the control group showed any positive results of AFB (Table 2). Clinically all the above patients suffering from urinary tuberculosis, showed no concomitant active pulmonary tuberculosis (P.T.B.) or involvement of tuberculosis to any other system apart from one patient with pott's disease. The result of other investigations carried out on the 31 patients showed positive AFB in their urine samples were as follows :-

General Urine Examination, showed pyuria in eight cases, pyuria + albuminuria in five,

Table 1. Number, age and sex of the patients with chronic UTI and of the control group

Groups	Males	Females	Total No.	Age Range (years)
Patients	28	73	101	13-73 (mean 40.1±15.4)
Control	09	13	22	13-75 (mean 52±17.4)

Table 2. Urine Examination of the patients and the control groups, for AFB, by two bacteriological methods.

Results	Direct Z.N. Stain		Culture for AFB	
	Patients	control	patients	control
No. of (+) ve.	20*	00	31*	00
No. of (-) ve.	81	22	70	22
Total No.	101	22	101	22

* p value < 0.01

Table 3. General urine examination of 31 urinary tuberculous patients.

Findings of GUE	No. of cases
Pyuria	8
Pyuria + albumnuria	5
Haematuria	4
Haematuria + albuminuria	3
Pyuria + haematuria	6
Total No.	31

Table 4. Culture results of Mid Stream Urine (MSU) for secondary bacterial infection of 31 urinary tuberculous patients.

No. of patients	Culture (+) ve.	Culture (-) ve.
31	12 (39%)	19 (61%)

haematuria in four, haematuria + albuminuria in three, pyuria + haematuria in six and pyuria + haematuria + albuminuria in five cases (Table 3). Culture of Mid Stream Urine (MSU), showed positive culture for bacteria other than AFB in 12 cases (39%) (Table 4). Complete Blood Picture; most of the urinary tuberculous patients in this study showed normal pictures except few having mild anaemia of secondary type. E.S.R. ranged from 3 to 65 mm./1 hour (mean of 23). Renal Function Tests (blood urea, serum creatinine and electrolytes) were within normal range. Chest X-ray, showed old

Table 5. Results of IVU of 31 urinary tuberculous patients.

Findings	No. of Cases
Non functioning Rt. kidney	1
Blunited Rt. upper calyx	3
Abnormal kidney (Lt. P. Cs.)	1
Rt. pelvis dilated	1
Rt. hydronephrosis	1

P.T.B. in three cases (one of them gave a history of P.T.B. 10 years age and other case has a previous history of T.B. lymphadenitis). The other X-ray were normal. The results of IVU were normal but only 7 cases showed some abnormalities as shown in Table 5. The histopathological results of renal biopsies which were done for three patients with pure haematuria were normal (light and electrone microscopical studies).

DISCUSSION :

Isolation of AFB from urine samples is the confirmation of renal tuberculosis[4]. In this study urine cutlure revealed AFB in 31 cases (30.69%). Of 31 cases only 20 were proved positive by the direct Ziehl-Neelsen Stain, i.e. 11 cases failed to be detected by this method. The difference between these two bacteriological methods (direct and culture) be es a statistical significance ($p < 0.01$) which was also known[9] and once more confirms the efficiency of culture method in recovering AFB. A similar study[6] carried out in Egypt revealed an incidnece of 16.3% in one year. The incidences in this study and in Egypt are high compared to others, 0.3 [2], 1.7 to 4/100,000 population[3] and 1.85 percent[5]. This may be atributed to the fact that the subjects in this study were not randomly selected among the population. They were a group of patients selected on the basis of certain criteria and history mentioned precedingly. Concerning these, most of the patients in this study were females (73 females versus 28 males). UTI is a common disease in females and it is well known that at least 15% of them are affected at some umes during their life [10].

General symptoms (apart from the renal system) in our patients were mild. Lassitude, fatigue and anorexia were present only if the infection was severe[4]. Also on physical examination, our patients showed no abnormal signs neither in the renal nor in other systems apart from that with pott's disease. This may indicate that the patients presented in the early stages of their illness. General urine examination, revealed pyuria and/or haematuria with or without albuminuria. In urinary tuberculosis, pus cells may or may not be present and haematuria may be also seen[4]. The presence of pus cells without organism in acid urine is very suggestive of tuberculous infection[11]. Culture of MSU, as shown in table 4, 12 cases out of 31, showed positive culture of bacteria other than AFB. The most frequently isolated organism was Ecs. coli. A posi-

tive culture of pathogen does not exclude the diagnosis of urinary tuberculosis, but indicates secondary bacterial infection and this warrents an intensive treatment[4]. ESR, mean of 23 mm/1 hour is not highly elevated. ESR has a limited value due to its non specificiyt (12&13) and it is not a reliable guide to the activity of T.B. as judged bacteriologically[9]. IVU, showed some abnormalities in seven cases (Table 5) These findings suggest that most of out-patients were presented in their early stages of the disease. However, abnormal presence of such radiological findings in spite of antibiotic treatment, should immediately raise the suspicion of urinary tuberculosis[4]. Glomerulonephritis as a cause of haematuria was excluded in three patients (out of 4) who underwent renal biopsies and showed histopathology. In spite of the findings preceded, a case of urinary tuberculosis may lack entirely the symptoms as frequency, dysuria, backache, weight loss, easy fatiguability, low grade fever and night sweats even in advanced stages of the infection[14]. Also urine analysis may not be helpul. This study draws the attention that there is a significant incidence of urinary tuberculosis among patients with chronic UTI. Early diagnosis anf treatment of such cases may prevent serious complications as renal failure. Also a similar work is worthwhile to be repeated in other parts of our country for its epidemiological importance.

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REFERENCES :

1. Bruce LG. The incidence of genitourinary tuberculosis in the Western Region of Scotland. Br. J. Urology, 1907, 42: 637-641.

2. Arnold CC. Genitourinary tuberculosis. Urology, October, 1982, XX, No. 4: 353-358.

3. Fritjofsson A, Kollberg S. The incidence of urogenital tuberculosis in Sweden. Inter. Urology and Nephrolohy, 1974, 5: 291-296.

4. Anwer H, Gow FG. Genitourinary tuberculosis. Cit. by Hussian. I. Tropical Urology and Renal Disease. 1st. published, Churchill-Living Stone, Edinburgh pp. 119, 125, 1984.

5. Yamauchi. S, Hirakida M. Med. J. of Mutual Aid Association, (Tokyo), 1986, 17: 26-32.

6. El-Baz MG, Youssef R, Abdel-Rahman MET, Wassef S, Elkerdani SK> Significant incidence of Mycobacterium tuberculosis in Urinary tract infection. In Procedding of the 14th. Medical Arab Union Confereene, Cairo-Egypt, 17-19 January 1988: 74.

7. Jesen KA. Zentbl. Backet Parasitked Abt 1 Orig, 1932, 125: 22. Cit. by Allen BW and Baker FJ. Mycobacteria, Isolation, Identification and Sensitivity Testing. Butterworth, London, pp. 48. 1968.

8. Sula. L. Die fibrine Spinnge Webshautchen-Kultur Von tuberkel bazillen ausexudaten beisog Idiopathischen pleulitiden. Schweizeriche Zeitschrift fur Allgemeine Pathologie and Bacteriologie,

1947, 10: 125.

9. Mohammad-Ali R.Y. Comparative study of diagnostic methods of pulmonary tuberculosis and drugs sensitivity of th isolates. M.Sc. Thesis, Univ. of Mosul. pp. 154, 179, 1979.

10. Stamm ES, Turck M. Urinary tract infection pyelonephritis and related conditions. Cit. by Patersdorf, Adams, Braunwald, Isselbacher, Marten Wilson. Harrison's Principles of Internal Medicine. 10th. ed. 2nd prenting, McGraw-Hill International Book Company, pp. 1649, 1984.

11. Rains AJH, Mann CV. Baily and Love's Short Practice of Surgery, 20th ed., H.K. Lewis and Co. Ltd., London, pp.1243, 1988.

12. McCregory IA, Doogan T, 1954. Cit. in Report to the Medical Research Council. 1962.

13.Al-Talib AM, Mohammad-Ali RY, Ahmad BH. ASO-Titer in tuberculous patients. J. Fac. Med. Baghdad, 1986, 23 (No. 2): 41-45.

14. Majid, AJ. Urinary tuberculosis. Postgraduate Doctor, 1984, 7, March, No. 3: 189-190