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To study the role of blood investigation in diagnosis of classic FUO

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Abstract

Background: To study the role of blood investigation in diagnosis of classic FUO

Methods: It was a cross sectional study of one year duration performed from 1st June 2013 to 31st May 2014 in department of Medicine I.G.M.C. Shimla. Patients above 18 year of age and who fulfilled the Durack and Street criteria of FUO were included in the study

Results: Anaemia was present in 73%, leukocytosis was present in 15%, leucopenia was present in 15%, neurophilia was present 38% and pancytopenia was present in 4.4% of cases. ESR was high in 82% of cases. High ESR had good corelation with infections. Serology was helpful in reaching the diagnosis in 19.6% of cases and bone marrow in 6.6% of cases. Cultures and lymph node biopsy were not helpful in reaching the diagnosis.

Conclusion: Anaemia, leukocytosis and neutrophilia were not associated with any particular infection except for pancytopenia, which was associated with lieshmaniasis..

Keywords: Hb, TLC, ESR, FUO, PDCs

Introduction

Diagnostic advances continuously modify the spectrum of FUO causing diseases; for example, serological tests have reduced the importance of human immunodeficiency virus (HIV) and numerous rheumatic diseases (e.g. systemic lupus erythematosus, rheumatoid arthritis) as a cause of FUO. Modern diagnostic techniques (e.g. ultrasonography, computed tomography, magnetic resonance imaging) enable early detection of tumors and abscesses that were once difficult to diagnose.[1]

FUO is caused by infections, neoplasms, collagen vascular diseasesand numerous miscellaneous diseases. The literature reveals that between 5 to 15% of FUO cases defy diagnosis, despite exhaustive studies. FUO that persist for more than one year is less likely to be caused by infection or neoplasm and is much more likely to be the result of granulomatous disease.[2] The following common conditions are sources of FUO: tuberculosis, abscesses, urinary tract infection, endocarditis, hepatobilliary infection, osteomyelitis, rickettsia, chlamydia, systemic bacterial illnesses, spirochetal diseases, herpes virus, fungal infections parasitic infections, lymphomas, leukemias, solid

tumors, malignant histiocytosis, collagen vascular and autoimmune diseases, sarcoidosis, granulomatous hepatitis, drug fever, endocrine disorders, giant cell arteritis, polymyalgia rheumatica, polyarteritis nodosa, to name a few conditions. More than 30% of FUO cases in persons older than 50 years are related to connective tissue disorders and vasculitic diseases. Giant cell arteritis and polymyalgia rheumatica are two principal connective tissue etiologies accounting for 50% of cases.[3]

Material and methods

Design of the study: This was a cross sectional study of one year duration and was performed in the Department of Medicine in I.G.M.C. Shimla.

Inclusion Criteria

Only patients above 18 years of age were included in the study.

Only those patients who fulfill the Durack & Street criteria of classic FUO were included in the study i.e.

- Temperature of > 38.3°C (101°F) on several occasions
- A duration of fever of > 3 weeks and,
- Failure to reach the diagnoses despite 3 days of hospital.

Exclusion Criteria

Patient with neutropenia (absolute neutrophil count<500/ml) patient developing fever 48 hours after hospital admission and human immunodeficiency virus (HIV) positive patients were excluded from study.

Method Of Study

After initial history taking and thorough physical examination, the patients were subjected to routine investigations. The history taking and investigations are discussed in detail in the proforma.

Investigations

Haematological profile-Hb, TLC, DLC, ESR, Platlet count by sm-9haematological analyser.

Biochemical Profile

FBS/RBS, LFT, RFT, Electrolytes was done by KONE LAB 30fully automatic analyser.

Results

Table 1: Haemoglobin and total leukocytecount

Hb	Male	Female	Total/Freq	Etiology
Normal	11	1	12(27%)	Enteric, No diagnosis, Chloroquine responsive fever, TB
Low	20	13	33(73%)	-do-
TLC				
TLC	Male	Female	Total/Freq	Etiology
Normal	21	10	31(70%)	Tuberculosis-9(20%),Enteric- (13.3%) Brucellosis-6(13.3%)
High	5	2	7(15%)	Tuberculosis, SLE, PAN
Low	4	3	7(15%)	Enteric, Lieshmaniasis

Table 2: Differential Leukocyte Count

Variable	M	F	Total/Freq	Etiology
Neutrophilia	11	6	17(38%)	Tuberculosis-6(13.3%)Enteric-4(8.9%),SLE-1,Multiple myloma-1
Lymphocytosis	2	0	2(4.4%)	Tuberculosis-2
Monocytosis	1	0	1(2.2%)	Brucellosis-1
Pancytopenia	1	1	2(4.4%)	Lieshmaniasis-2
Normal	16	7	23(51%)	Tuberculosis-4, Enteric-4, Nodiagnosis-2,Trial-2

Table 3: Erythrocyte Sedimentation Rate

ESR	Male	Female	Total/Freq	Etiology
0-20	7	1	8(18%)	Enteric-2, Chloroquine responsive fever-2Brucellosis-3
21-100	19	10	29(64%)	Enteric-6(13.3%), Tuberculosis-9(19.8%)
>100	5	3	8(18%)	Tuberculosis-4(8.8%)

Table 4: Mountoux and Serological Tests

Test	Male	Female	Total/Freq	Diagnostic/Etiology
Montoux	6	4	10(22.2%)	6.6%/Tuberculosis
IgM Scrub	6	3	9(20%)	-
ANA	3	5	8(17.7%)	2%(SLE)
Brucellaserology	5	3	8(17.7%)	6.6%(Brucella)
Widal	5	1	6(13.3%)	-
RH factor	1	3	4(8.8%)	-
Amoebicserlogy	3	0	3(6.6%)	2% (Amoebiasis)
Hep-B/C	2	2	4(8.8%)	-
Hb- Elect	1	1	2(4.4%)	2% (Multiple myeloma)
ADA	5	1	6(13%)	6.6/Tuberculosis

Discussion

Anaemia was present in 73% of cases. TLC was normal in 70% of cases in our study. Neutrophilia was present in 38% of cases, lymphocytosis was present in 4.4% of cases, monocytosis was present in 2.2% of cases. Pancytopenia was present in 4.4% of cases. Baicus et al [4] reported that anaemia, abnormal white cell count, high ALT and bilirubin are associated with severe outcome. Barrot O[5] showed in their study that monocytosis in peripheral blood was associated with tuberculosis, brucellosis, IBD and solid tumor e.g. Hodgkin's disease. Cucin et al[6] showed in their study that lymphocytosis was associated with tuberculosis. In our study though infection was the cause of FUO in 80% of the cases but the laboratory investigations e.g. anaemia, leukocytosis and neutrophilia were not associated with any particular infection as seen in above mentioned studies except for pancytopenia which was associatedwith lieshmaniasis.

ESR was high in 82% of cases. Bleeker Rover et al[7] and Esposito et al[8] observed that elevated ESR was associated with malignancy and NIID.

Bandyopadhyay et al[58] also noted association of elevated ESR withmalignancy. In our study infections were responsible for 80% of the casesso it can be said that infectious diseases also have good correlation with elevated ESR. Serology was done in 60.4% of cases. It was helpful in making the diagnosis in 19.9% of cases. This included 3 cases of brucellosis, 3 cases of tuberculosis, one cases of amoebiasis, one case of SLE and one case of multiple myeloma. Petersdorf and Beeson[2] used serology to diagnose 6.4% of the cases. Bleeker Rover et al[7] performed serological studies in 40% of the patients. Kejriwal et al[9] used serological studies to diagnose 17.4% of the cases. Montoux was done in 22.2% of cases and it helped in making the diagnosis in 6.6% of cases. Culture was sent in all the patients. We observed that cultures werenot useful in reaching the diagnosis. Expect for one cases all the cultures were negative. Out of four pus culture only one was positive for organism. Larson and Featherstone[42] also observed that cultures were diagnostic in only 5% of the cases. Bleeker Rover et al[7] found that culturewere helpful in diagnosis in only 1.2% of the cases. Kejriwal et al[57] utilized cultures for diagnosing 14% of patients. So blood cultures were not of much diagnostic help in our study which is in accordance with above mentioned studies.

Conclusion

Anaemia, leukocytosis and neutrophilia were not associated with any particular infection except for pancytopenia, which was associated with lieshmaniasis.

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