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PHYSICIAN CONNECT

Dear Doctor,

Greetings from Micro Labs. We are happy to bring you "Physician Connect" which contains latest and interesting news.

This issue contains:

1. In type 2 diabetes, baseline anxiety disorders are linked to the development of diabetic kidney disease.
2. A retrospective study on evaluation of infectious endocarditis in children.
3. The effect of metabolic risk variables on hepatic and cardiac outcomes in individuals with and without alcohol-related fatty liver disease.
4. A case of Mild Autoimmune Haemolytic Anaemia and Life-Threatening Severe Thrombocytopenia Associated with Brucellosis.

Should you require any article or, medical information, please feel free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback.

Best Regards,

Medical Team, Micro Labs Limited.

In type 2 diabetes, baseline anxiety disorders are linked to the development of diabetic kidney disease.

Introduction:

Diabetic kidney disease (DKD) is a prevalent reno-microvascular complication of diabetes mellitus that affects 30 to 40% of diabetics. DKD is going to become more common as the prevalence of diabetes increases. Depression and anxiety are prevalent psychiatric health conditions in individuals with chronic conditions, and depression affects roughly one-third of diabetics [(1)]. DKD clinical symptoms include albuminuria, decreased kidney function, or both. Understanding modifiable risk factors associated with DKD progression helps to develop early interventions to prevent DKD progression and improve clinical outcomes. The study's objective was to investigate the potential link between anxiety and the development of DKD in type 2 diabetes [(2)].

Methods:

This was a prospective cohort study included 2040 subjects with type 2 diabetes. A structured clinical interview based on the 10th Revision of the International Classification of Diseases (ICD) was used to make the initial diagnosis of anxiety disorders. The transition from one urinary albumin excretion rate (AER) stage to the next or the onset of kidney failure during the follow-up period were both considered signs of DKD progression.

Results:

Of the 2040 subjects included in the current study, 403 (19.8%) had a diagnosis of anxiety disorder, of which 202 (50.1%) had social phobia, 127 (31.5%) had panic disorder, 74 (18.4%) had generalized anxiety disorder, and 107 (26.6%) also received a diagnosis of depression. 340 (16.7%) people's kidney condition deteriorated over a median follow-up period of 3.2 years. Anxiety disorders were independently associated with an increased risk of DKD progression after adjusting for potential confounders such as depression or an anxiety-depression interaction term. The kidney status deteriorated in 340 (16.7%) participants over the median follow-up period of 3.2 (2.5–3.5) years, ranging from 14.7% of participants without anxiety to 24.8% of those with anxiety. When compared to non-progressors, progressors were older, less likely to be female, had a longer diabetes duration, a greater incidence of hypertension, less use of RAS blockers and statins, and higher amounts of total cholesterol. Diagnosed anxiety disorders were found to be greatly linked with a higher chance of kidney status progression using Cox proportional hazards models (table 1). Participants with anxiety conditions had a 1.65-fold greater chance of renal decline in univariate Cox regression models. Anxiety disorders had a significant positive relationship with the chances of DKD progression after controlling for potential confounding variables.

Table 1: Association between anxiety and progression of diabetic nephropathy in type 2 diabetes.

	HR	95% CI	*p* Value
Univariate model	1.652	1.278–2.136	<0.001
Multivariate-adjusted model			
Model 1*	1.553	1.122–2.150	0.008
Model 2†	1.539	1.130–2.095	0.006

*Model 1 is adjusted for age, sex, BMI, marital status, smoking, hypertension, duration of diabetes, use of renin-angiotensin system blocker and statin, HbA_{1c}, eGFR, total cholesterol, HDL cholesterol, triglyceride, LDL cholesterol, blood pressure, and an anxiety × depression interaction term. †Model 2 is adjusted additionally for depression. BMI: body mass index; eGFR: estimated glomerular filtration rate; HR: hazard ratios; CI: confidence intervals

Discussion:

This study investigated the relationship between anxiety and the development of DKD. it is possible that other psychological variables, depression in particular, could interact with anxiety and thus could affect the relationship between anxiety and the progression of DKD.

In a parallel study, Sukkar L et al. discovered that people with diabetes who experience anxiety or depression have a higher incidence of chronic kidney disease [(3)].

In a study conducted by Jiang L et al. found a correlation between baseline anxiety symptoms and a 3-fold increased risk of developing type 2 diabetes [(4)].

Conclusion:

Individuals with type 2 diabetes who have anxiety disorders have a higher risk of DKD progression, independent of traditional risk factors and depression.

Independent of conventional risk factors and depression, people with type 2 diabetes who have anxiety disorders have a higher risk of DKD progression.

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A retrospective study on evaluation of infectious endocarditis in children.

Introduction:

Infectious endocarditis is defined as the transfer of a microorganism (typically a bacteria) onto an endocardium that has already been damaged. Its prevalence in paediatric wards ranges from 0.42 to 1.35 per 1000 admissions, and it has been increasing for a number of decades. Complex interactions between circulating microorganisms, damaged valvular endothelium, and the host immune system are a part of the pathophysiology of infective endocarditis [(1)]. The incidence of infectious endocarditis (IE) is also influenced by the rising number of corrective or palliative surgeries performed for Congenital heart disease (CHD), with or without patches, vascular grafts, or prosthetic cardiac valves. The differences between IE patients with and without heart disease as well as the clinical characteristics and outcomes of paediatric patients with IE are limited. This study aimed to describe and contrast the major IE complications, outcomes, and clinical characteristics in paediatric patients with and without heart disease [(2)].

Methods:

This is a retrospective cohort study includes Children aged 0–20 years with IE. The disease diagnoses, laboratory test results, management methods, and prescribed medications were collected as demographic information about the patient. The International Classification of Diseases, Ninth and Tenth Revision codes (ICD-9 and ICD-10, respectively) were used to determine the diagnoses. The procedures with the corresponding national health insurance (NHI) codes for valvular surgery were used to recognize laboratory test results in CGMHs.

Results:

Totally 208 patients with IE were included in the study in that 114 had heart disease. Blood cultures from about 27.9% of patients were positive. The most frequent contributing pathogen identified in all study participants was a *Staphylococcus* species (n = 33, 15.9%), followed by a *Streptococcus* species (n = 24, 11.5%). Table 1 lists the clinical traits of the patients with and without HD (heart disease). When compared to the non-HD group, the HD group experienced more complications, particularly cardiac issues (39.5% vs. 16%, p = 0.0002). Despite having more valve surgeries (43.9% vs. 8.5%, p<0.001) and longer hospital stays (28.5 vs. 12.5, p = 0.021), patients with heart disease had lower mortality (3.5% vs. 10.6%, p = 0.041) than those without heart disease. In 166 patients with full laboratory data, the risk variables linked with in-hospital mortality were further investigated. The mortality group had more left-shifted immature neutrophils and thrombocytopenia than the survivor group. The mean platelet count during thrombocytopenia events was 71.4 $\times 10^3$, whereas it was 269.2$\times$ 10^3 in those who did not experience thrombocytopenia. In paediatric patients with IE, thrombocytopenia was an independent risk factor for in-hospital mortality (OR = 6.56, 95% CI: 1.43-40.37).

Table 1. Comparison of the clinical characteristics of pediatric patients with and without heart disease suffering from infective endocarditis

Characteristics	Overall (n=208)	Heart disease (n=114)	Non heart disease (n=94)	p-value
General				
Age,y(median[IQR])	13 (4, 18)	13 (4, 18)	11.5 (4, 18)	0.7671
Male,n (%)	118 (56.7)	66 (57.9)	52 (55.3	0.7091
Microbiology	58 (27.9)	37 (32.5)	21 (22.3)	0.1054
Streptococci, n (%)	24 (11.5)	22 (19.3)	2 (2.1)	0.0001
Staphylococci, n (%)	33 (15.9)	16 (14.0)	17 (18.1)	0.4262
Staphylococcus aureus, n (%)	27 (13.0)	14 (12.3)	13 (13.8)	0.7408
Pseudomonas, n (%)	2 (1.0)	0 (0)	2 (2.1)	0.203
Candida, n (%)	2 (1.0)	0 (0)	2 (2.1)	0.203
Complications	60 (28.9)	45 (39.5)	15 (16)	0.0002
Neurologic 2 , n (%)	13 (6.3)	10 (8.8)	3 (3.2)	0.098
Cardiac 3 , n (%)	40 (19.2)	34 (29.8)	6 (6.4)	<0.0001
PE, n (%)	15 (7.2)	8 (7.0)	7 (7.4)	0.9052
Valve surgery, n (%)	58 (27.9)	50 (43.9)	8 (8.5)	<0.0001
Mortality, n (%)	14 (6.7)	4 (3.5)	10 (10.6)	0.0411
Hospital stay (median (IQR))	20 (6, 40.5)	28.5 (8.25, 42.75)	12.5 (5, 36.75)	0.021

Heart disease 1 = congenital heart disease (CHD) + cyanotic congenital heart disease + hypertrophic cardiomyopathy (HCM). Neurologic 2 = ischemic + haemorrhagic stroke. Cardiac 3 = heart failure + myocardial infarction + ventricular arrhythmia.

Discussion:

The results of this study exhibited significant differences in the causative microbiological features, clinical characteristics, and outcomes between paediatric patients with and without HD suffering from IE. Significantly more *Streptococci* species and cardiac complications were present in the HD group compared to the non-HD group. Even though the HD group experienced more valve surgeries and longer hospital stays, their mortality rate was lower than that of the non-HD group. In this study, overall in-hospital mortality was independently correlated with thrombocytopenia [(2)].

El-Ashry et al.'s study reveals that in an effort to improve the diagnosis of pathologically proven native valve blood-culture negative IE cases, modified criteria and diagnostic techniques, like imaging, have been introduced [(3)].

Conclusion:

Microbiological and clinical characteristics of paediatric patients with IE varied between those with and without heart disease. In paediatric patients with IE, platelet counts can be used as a risk factor for in-hospital mortality.

Children with IE had different microbiological and clinical traits depending on whether they had heart related disease or not.

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The effect of metabolic risk variables on hepatic and cardiac outcomes in individuals with and without alcohol-related fatty liver disease

Introduction:

Liver disease is now a leading cause of premature mortality and a growing global health burden. Alcohol-related liver disease (ARLD) and metabolic-syndrome-related liver disease (also known as non-alcohol-related fatty liver disease—NAFLD) were the two most frequent causes of chronic liver disease. A fatty liver (steatosis) progresses in some people through inflammation (steatohepatitis), stiffening (fibrosis), and scarring (cirrhosis), increasing the risk of decompensated liver disease or liver cancer. Chronic liver disease was frequently diagnosed as a result of abnormal liver blood tests or liver imaging [(1)]. In patients with fatty liver disease, metabolic risk factors (MetR) were linked to hepatic and cardiac outcomes. The goal of the study was to determine whether MetR affects alcoholic fatty liver disease (AFLD) and non-alcoholic fatty liver disease (NAFLD) differently [(2)].

Methods:

subjects older than 20 were included in this retrospective, multicentre, observational, comparative cohort study. Initial data extraction from a database included 23,884 subjects with FLD receiving their first diagnosis, and their medical histories. The subjects included only those with confirmed AFLD or NAFLD according to the standard code. MetR included obesity, hypertension, diabetes mellitus, and dyslipidaemia. Based on MetR within AFLD and NAFLD, follow-up data was analysed for the incidence of hepatic outcomes, cardiac outcomes, and death between AFLD and NAFLD.

Results:

Out of 3,069 and 17,067 AFLD and NAFLD cases, 2,323 (75.7%) and 13,121 (76.9%) had one or more MetR respectively. Independent of MetR, subjects with AFLD had a higher risk of hepatic outcomes (adjusted risk ratio [aRR], 5.81) than subjects with NAFLD. With an increase in MetR, the risk of cardiac outcomes in AFLD and NAFLD became similar. Patients with NAFLD who did not have MetR had a lower risk of cardiac outcomes than those who did (aRR, 0.66 and 0.61 for MetR $\geq$1 and MetR$\geq$ 2, respectively, all $p<0.05$). However, they did not have a lower risk of hepatic outcomes (Table 1). MetR was not linked to subjects with AFLD, hepatic, or cardiac outcomes.

Table 1. Risk of adverse cardiac and hepatic outcomes on intragroup comparison in those with AFLD and those with NAFLD according to MetR.

	Outcome incidence	Outcome incidence (Events /Follow-up time [person-year])	Adjusted risk ratio*	95% Confidence interval	P value
AFLD;					
No MetR vs. MetR ≥ 1	Cardiac outcomes	18/2,531 vs. 40/5,395	0.98	0.56–1.71	0.93
	Hepatic outcomes	21/2,569 vs. 47/5,556	1.09	0.37–3.19	0.88
No MetR vs. MetR ≥ 2	Cardiac outcomes	18/2,606 vs. 32/4,771	1.04	0.58–1.85	0.90
	Hepatic outcomes	21/2,567 vs. 39/4,786	1.08	0.33–3.52	0.89
NAFLD;					
No MetR vs. MetR ≥ 1	Cardiac outcomes	40/13,915 vs. 126/28,676	0.66	0.46–0.94	0.02
	Hepatic outcomes	25/14,060 vs. 36/27,973	1.35	0.52–3.52	0.54
No MetR vs. MetR ≥ 2	Cardiac outcomes	40/13,174 vs. 126/24,696	0.61	0.43–0.87	0.006
	Hepatic outcomes	25/13,298 vs. 30/25,152	1.59	0.65–3.92	0.31

Note: AFLD, alcoholic fatty liver disease; NAFLD, non-alcoholic fatty liver disease; MetR, metabolic risk factor.

Discussion:

According to this study, subjects with AFLD experienced much higher rates of both hepatic and cardiac outcomes than those with NAFLD. On the other hand, subjects with NAFLD experienced an increase in the incidence of heart disease due to MetR, and the outcomes resembled those of AFLD. Although liver cancer and mortality rates increased in NAFLD patients, there was no statistically significant difference between the cumulative incidence and adjusted regression analysis. These findings suggest that subjects with AFLD and those with NAFLD experience different effects of MetR on the incidence of hepatic and cardiac outcomes, indicating the need for careful risk stratification in the context of MAFLD [(2)].

The results of a prior study by Simon TG et al. suggest that AFLD and NAFLD may be affected differently depending on the severity of MetR. The study found that an increase in MetR has an impact on cardiac outcomes and mortality in NAFLD [(3)].

It is possible that alcohol consumption itself had a greater influence than MetR on the occurrence of clinically significant outcomes. In Chang Y et al.'s and this study's findings on the distribution of alcohol consumption suggest that AFLD has a dominant effect on the incidence of hepatic outcomes over cardiac outcomes [(2,4)].

Conclusion:

Regardless of the quantity of MetR, the AFLD group showed better hepatic and cardiac outcomes when compared to the NAFLD group. The proportion of cardiac outcomes increased in the NAFLD group as the number of MetR increased. Hepatic and cardiac outcomes in the AFLD group were unrelated to the quantity of MetR. Overall, AFLD and NAFLD may have different clinical effects on FLD patients than AFLD.

As the number of MetR increased, the proportion of cardiac outcomes increased in the NAFLD group. The quantity of MetR had no effect on the AFLD group's hepatic and cardiac outcomes.

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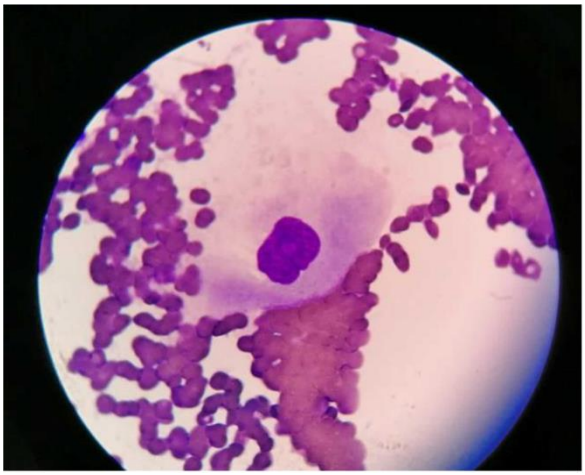
A case of Mild Autoimmune Haemolytic Anemia and Life-Threatening Severe Thrombocytopenia Associated with Brucellosis

Brucellosis, also known as Malta fever or Mediterranean fever, is a common zoonotic bacterial infection. The gram-negative coccobacillus that causes it has several species, but the two that most frequently affect humans are *B. melitensis and B. abortus*. Either acute or insidious disease onset occurs [(1)]. Rare reports of brucellosis-related hematologic disorders like anemia, leukopenia, and thrombocytopenia occur. Brucella can cause an autoimmune response to spread throughout the body. Two primary causes of thrombocytopenia are decreased platelet synthesis by the bone marrow and increased platelet degradation. Only a few cases of brucellosis-related autoimmune haemolytic anemia and immune thrombocytopenia have been documented in the literature. This case study investigates the unusual correlation between autoimmune haemolytic anemia and thrombocytopenia with brucellosis in a female patient and outlines a plan for treating all three symptoms [(2)].

Case presentation:

For two weeks, a 73-year-old female patient complained of generalized body fatigue and fever. She also reported one episode of gingival bleeding and generalized body rashes, but there was no evidence of epistaxis, hematemesis, or melena. Before being admitted, the patient had left knee pain for a week. Hypertension was diagnosed in the past and was treated with perindopril and amlodipine. Additionally, for the past two years, hydroxychloroquine and celecoxib were used to control osteoarthritis. The blood culture was given to the microbiology lab for additional review. The patient had critically low thrombocytopenia when she was admitted to the hospital on day 1. Only1 × 10e3/µ·L of platelets were present, and there was gum bleeding, purpura, and a generalized body rash. Peripheral blood film analysis confirmed normal Hb and RBCs. The patient's platelet counts gradually increased to 18 ×10e3/µ·L on day 7. On day 10, her haemoglobin level was 9.5 and her platelet count remained low at 12 ×10e3/ µ·L. Based on the organism's presence in the blood and a high Brucella serology, the diagnosis of Brucella was made. The serological evaluation revealed a positive Brucella antibody titer. The platelet counts increased to 106 ×10e3/µ·L three days after Brucella treatment (day 13 of admission). It returned to normal 306 ×10e3/µ·L. after five days of Brucella treatment (day 15 of admission). The patient was discharged and Her platelet count remained within the normal range of 301 × 10e3/µ·L at the five-day outpatient check-up. She now has a haemoglobin level of 12.1 g/dL.

Brucella, Gram-negative coccobacilli.



Discussion:

A 73-year-old women with moderate autoimmune hemolytic anaemia and substantial thrombocytopenia was diagnosed with brucellosis. The coexistence of two haematological diseases in a brucellosis case is rare and uncommon Brucellosis, a disease that is fatal and spreadable, has the potential to damage numerous human system. Consuming unpasteurized dairy products or coming into contact with sick farm animals while working are the main causes of infections [(2)].

In a similar study, M. A. Mubaraki discovered that albumin levels in brucellosis patients were significantly lower (34.976-0.702) than in the healthy group and that brucellosis patients had significant differences in their haematological and biochemical markers [(3)].

H. Lee et al in a similar study finds that Brucella spp. are facultative intracellular pathogens with the unique capacity to avoid phagocytosis by human macrophages [(4)].

Conclusion:

a brucellosis-related case of severe thrombocytopenia and mild autoimmune haemolytic anemia. It contributes to the literature on the effective use of rifampicin and doxycycline to treat brucellosis-related haemorrhagic disorders.

It adds to the literature regarding the use of rifampicin and doxycycline in the treatment of haemorrhagic disorders caused by brucellosis.

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