Journal club presentation Cardiology Department Chattagram Medical College, Chattagram

Topics:

1. Effect of Seasonal Variation on Hospital admission and Patient Outcome in Cardiology Department of Chattagram Medical College Hospital

Presenter: Dr. A.Y.M. Nuruddin Jahangir, Assistant Professor of Cardiology

2. Prediction of 10 Years and lifetime ASCVD Risk among working Physicians of CMCH Presenter: Dr .Anisul Awal, Assistant Professor of Cardiology

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Effect of Seasonal Variation on Hospital Admission and Patient Outcome in Cardiology Department of Chittagong Medical College Hospital

Introduction

- Cardiovascular diseases(CVD) is the number one cause of death worldwide, representing 30% of all global deaths
- A seasonal variation in morbidity & mortality due to CVDs has been noted in both northern & southern hemisphere with higher incidence during the winter than in the summer
- Limited data available regarding the effect of seasonal variation on hospital admission & patient outcome in Bangladesh
- So, this study was done in the Cardiology department of CMCH to see any seasonal variation in hospital admission & mortality due to CVD

Methods

- Type of study: Retrospective observational; using medical records as database
- Study period: Feb, 2017 to January, 2018(one year)
- Number of patients hospitalized due to various CVDs & no of deaths among hospitalized patients during this period were recorded on day-to-day & month-to-month basis.

Methods

 Data recording were done according to chief reasons of hospital admission e.g. AMI(STEMI & NSTEMI), UA, heart failure(acute LVF & CHF), syncope, arrhythmia, valvular, congenital, cardiomyopathy etc. Diagnosis were done according to standard practice in cardiology. Patients dying after hospitalization were recorded under `cardiac death.

Method-cont`d

- Data cumulated & analyzed on month wise & season wise manner
- Seasons were defined as follows:
- Summer=May to July (average temp.29.3°C)
- > Autumn=August to October (average temp.25.1°C
- Winter=November to January (average temp.19.8°C)
- Spring=February to April (average temp 27.4°C)
- Reasonal temperature collected from weather authority

Method-cont`d

• Primary study end point: Adjusted seasonal average of patients admitted and died. Adjusted seasonal average of patients admitted was calculated by normalizing the total number of cases for each season to a standard 90 day long length. For example, the number of cases occurring in the winter equaled the number of cases from 1st Nov to 31st January divided by the total number of days in this period (i.e. 92) multiplied by 90(ref. Spencer FA, et al)

Method-cont`d

• Statistical analysis done by using SPSS-21. T-tests with P<0.05 considering as statistically significant was done to find out significance of difference in primary end point between two seasons.

Results

- Total patient admitted : 20,886
- Male:12,183 ; Female:6,703; Male: Female=1.4:1
- Highest no. admitted during winter: 6,358 (30.4%)
- Lowest no admitted during summer: 4,509 (21.5%)
- Highest no. admitted on January: 2,336
- Highest no. of death on January : 230

Results-cont`d

- During spring it was 4,562(21.8%) and during autumn it was 5,191(24.8%)
- AMI(n=6,696),heart failure(n=5,090) and UA(n=5,162) were top 3 reasons for hospitalization comprising a total of 16,948(81.1%)
- Total death in winter: 579(28.3%), in spring: 509(25.3%), in summer: 466(23.2) & in autumn: 457(22.7%)

Results-cont`d

Diagram	Summer n(%)	Autumn n(%)	Spring n(%)	Winter n(%)	Total n(%)		
AMI	1,288(19.2%)	1,447(21.6%)	1,752(26.1%)	2,209(33.1%)	6,696(32%)		
UA	1,051(20.3%)	1,303(25.2%)	1,102(21.3%)	1,706(33.2%)	5,162(24.75%)		
HF	997(19.7%)	1177(23.1%)	1237(24.3%)	1,679(32.9%)	5,090(24.3%)		
Syncope	48(17.9%)	62(23.1%)	67(25%)	91(34%)	268(1.2%)		
Arrhythmia	1,03(15.6%)	138(20.7%)	202(30.4%)	221(33.3%)	664(3.1)%)		
Cardiomyo- pathy	61(21.5%)	63(22.2%)	71(25%)	88(31%)	283(1.3%)		
Valvular	281(17.3%)	346(21.3%)	465(28.6%)	534(32.8%)	1626(7.7%)		
Congenital	62(22.2%)	69(22.5%)	77(25.2%)	98(32.1%)	306(1.4%)		
Nonspecific	257(32.9%)	176(22.5%)	178(22.8%)	170(21.7%)	781(3.7%)		



Fig 1:No of patients hospitalized in each seasons(n=20,886).Number shown are the adjusted seasonal average number of admission in each season.



Fig 2:Distribution of chief reasons of hospitalization in 1 year(n=20,886)





May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr

Fig.4:Trend of admission due to AMI,UA and HF during 4 seasons(n=20,886)



Results- Contd.

Clinical Outcome	Winter vs Summer (Difference in no. of cases)	Winter vs Autumn (Difference in no. of cases)	Winter vs Spring (Difference in no. of cases)
AMI	.001	.000	.004
UA	.000	.000	.004
HF	.000	.000	.000
Valvular	.000	.002	.058
Arrhythmia	.010	.019	·437
Cardiomyopathy	.039	.059	.051
Syncope	.016	.060	.078
Congenital	.053	.088	.176
Nonspecific chest pain	.051	.870	.803
Death	.191	.152	.382

p-value calculated by t-test

Discussion

- Khan RC,et al :study of 8371 patients (May 2010-Apr 2012)-winter 33.9%,autumn 24.1%,spring 22.3%,summer 19.7%.Winter admission of top 3 CVDs:AMI 30.1%,UA 33.1%,HF 32.5%.Death rate: winter 31.5%,autumn 24.6%,spring 21.5%,summer 22.6%
- An increase in AMI or death due to AMI or both in colder weather reported in USA(Wisconsin),UK,India & Australia.Increase in AMI in hot weather by Heyer HE,et al ,wheras a Tasmanian study showed no correlation between maximum & minimal temperature and AMI occurrence.

• A significant winter peak in the seasonal variation of patient admission and death from cardiac diseases is detected.

• Winter peak of AMI,UA & HF share common mechanism. Hemodynamic stress & neurohumoral activation exaggerbate HF, induce myocardial ischemia & precipitate arrhythmia. Both ischemia & arrhythmia further increase risk of HF decompasation.RTI may also precipitate HF.

- Increased AMI in winter noticed first in 1930.Increased morbidity & mortality from AMI during winter in most age & sex group,with men conistently exhibiting a stronger seasonality pattern.
- MONICA project showed an increase in coronary event rate during comparatively cold periods ,especially in warmer climates.

- Highest hospitalization due to UA in winter; in a study of 2489 patients in Italy AP correlated with combination of critical low temperature & humidity. In a study in Canada UA admission was more in summer
- HF admission more in winter less in summer in USA, Europe, Argentina, Australia, Japan, Canada, Nigeria.

- Cold decreases synthesis of NO in endothelium, activate SNS & increase synthesis of catecolamine that increase BP.Vit.D decreases in winter & is associated with CHD risk factors e.g.HTN, DM.Vit.D affect cardiac muscle directly, regulate RAAS & modulate SM cell proliferation, inflammation & thrombosis.
- Also, serum cholesterol , fibrinogen, platelet aggregability (with decreased fibrinolysis) & obesity is more in winter. Physical activity low, infection high in winter.
- In one study patient with AMI had significantly lower mean 25-HOD3 than paired control subjects;the level being lowest in winter.

- Factors contributing are: sympathetic tone, BP, myocardial o2 consumption, plasma cortisol, fibrinogen & cholesterol, platelet & red cell factors, reduced coronary flow & reduced LV function in winter.
- Others- less exposure to sunlight with consequent vit D3 deficiency, seasonal variation in thyroid & adrenal function, winter increase in calorie intake & decrease in physical activity, increase in fluid Na burden, more arrhythmia, RTI etc. in winter.

Limitation of the study

- It is a single centre study and may not reflect the complete scenario of Bangladesh.
- Hospital data do not reflect information of OPD
- Temperature of a geographical area may not accurately represent actual individual temperature exposure, which may be influenced by personal factors.
- Hemodynamic and rheological alterations of temperature variability has not been investigated. The association may be due to some unmeasured confounders.

Limitation of the study-cont`d

- Influence of demographic factors such as age, sex, occupation on hospital admission & mortality has not been investigated.
- Data on relative humidity is missing.
- Retrospective nature of the study may raise the question of quality of discharge & mortality data.

Concusion

- A seasonal variation in hospital admission of CVDs and it`s mortality exists.
- Both number of hospital admission and mortality is highest during winter and lowest during summer.
- These findings may be helpful in determining therapeutic strategies, such as managing effectively the hospital beds & other resources in winter.

Concusion-cont`d

- Data may also be useful in improving preventive measures in susceptible patients in the community.
- Further study needed to investigate biological & non-biological factors for seasonality on morbidity & mortality.

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Patients overrun CMCH cardiology ward

ARUN BIKASH DEY, Ctg

The cardiology ward at the Chittagong Medical College Hospital (CMCH) is facing difficulties in coping with the number of patients due to a shortage of beds, equipment and staff.

The 60-bed ward on the first floor of the hospital building has to accommodate an average of 350 patients a day, making it difficult for the nine physicians on duty to treat patients with coronary artery disease (CAD).

This is the only specialised cardiovascular disease treatment centre in a government hospital in the greater Chittagong area. Though some private clinics and hospitals in the port city provide treatment to patients with CAD, a majority of patients cannot afford the expensive procedures.

To tackle the bed crisis, an extension of the ward was opened earlier this month on the fourth floor of the hospital building with 64 beds. However, the gap is still so much that patients are seen on the floor and in the corridors outside the ward, leading to sleep deprivation and minimal privacy.

Dr Prabir Kumar Das, an associate professor and head of the ward, said, "The cardiology ward remains very busy. The situation is worse as there is a shortage of staff and testing equipment."

There are only nine physicians currently working at the ward, he added. "We have one associate professor and two assistant professors; the rest are either associated with other wards or working as officer on special duty. There are no posts for a professor or medical officers."

"Despite this, it is the lone, trusted place for patients; they are happy with the treatment and the behaviour of the doctors and nurses."

Das said the ward also has a shortage of equipment. "The exercise treadmill test (ETT) machine is out of order for two years now. At present, we have one echocardiography machine but we need two more, along with two more electrocardiogram (ECG) machines," he said.

"The lack of available inpatient beds and equipment remains a major impediment to the delivery of good health



Patients admitted to the cardiology ward lie on the floor at Chittagong Medical College Hospital (CMCH). Due to an acute shortage of beds at the only state-run specialised cardiac institute in greater Chittagong, patients are forced to receive treatment this way. The photo was taken recently.

care," said Das. "The ward ideally needs two professors, four associate professors and six assistant professors."

"I recently wrote to the health ministry to create a post for at least one professor," he said.

With the ward extension being on a separate floor, and the coronary care unit (CCU), a place for critical patients, and testing equipment all on the main floor, it is time consuming to transfer patients from one floor to another, said hospital staff.

The presence of medical representatives has also become a matter of worry in the already overcrowded wards.

According to CMCH rules, medical representatives are allowed to visit the wards on Sundays and Wednesdays, between 1:00pm and 2:00pm.

However, in the last week of February, it was seen that medical representatives were intruding into the CCU in the evenings as well. They were taking pictures of patients' prescriptions with their smart phones.

Jakir Hossain, a patient attendant, said it was annoying that at least four medical representatives insisted that he purchase their brand of pacemakers for his father, who was admitted to the ward.

"My father had to stay on floor for the first three days of his weeklong stay, as there was no vacancy at the ward." Hossain later went for the pacemaker brand that the doctor recommended.

Shuvechchha Ghosh brought her father Kajal Kanti Ghosh to the hospital after he complained of chest pains last week. "My father's health deteriorated twice on the first night, but the doctors promptly gave the necessary treatment and saved his life," she said.

Abdul Hai, who is in his mid 80s, came from Lakhkhipur area when he felt unwell. He suffered from a second heart attack.

"Whenever I feel unwell, I inform the doctors and they immediately give me the treatment to make me feel better," he said.

Another patient, Taposh Barua, said the doctors are cordial and polite but not the other staff.

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http://epaper.thedailystar.net/index.php?opt=view&page=3&date=2018-04-01