International Journal of Healthcare Sciences ISSN 2348-5728 (Online)
Vol. 5, Issue 1, pp: (362-367), Month: April - September 2017, Available at: www.researchpublish.com

Implications of Pneumonia in Hail Region in North of Saudi Arabia

[1]Kareem Saleh Abdulhadi Alshammari, [2]Abdulkarim Saleh Abdullah Alkhateeb, [3]Ibrahim Yousef Ibrahim Alolayt, [4]Abdulrahman Mubarak Eid Alshammari

Abstract: **The goals of this study were to determine whether pneumonia has implications on patients admitted to KKH, and what are the implications on patients with chronic disease such DM, Epilepsy, HTN, and COPD. A prospective cohort study was performed, this study was conducted at King Khalid hospital (KKH) in Hail City, North of Saudi Arabia, between the period of 2015 and 2016. Data were collected by a prospective reviewing the patient's medical records admitted to the hospital because of pneumonia in one year long (2015-2016). Pneumonia mostly has normal implications on patients as for most of this study were normally discharged as for the outcomes. It's followed by Discharge Against Medical Advice (DAMA) which was the highest in no epilepsy and no down syndrome. Diabetes mellitus (DM) was the most risk for implications of pneumonia in this group followed by asthma and other respiratory problems. Death had no strong effect on the implications. But as for this study showed 17 patients have died showing the high risk of pneumonia implications on patient's life if they have more other chronic disease that can worsen the situation.**

Keywords: **King Khalid hospital (KKH), Discharge Against Medical Advice (DAMA).**

1. INTRODUCTION

Pneumonia is a respiratory infiltrative disease affecting all ages, as well as in grown-up clinical wards across the creating world it is one of the most common admission medical diagnoses. The developed world, pneumonia is located classically in more youthful grownups, who have a significant inpatient mortality of 5% - 23% [(1)]. Pneumonia remains to be a serious health issue in the United States [(2)]. About 10%-20% of pneumonia situations require admission to the intensive care unit [(3)]. Pneumonia is thought about the 7th leading cause of death generally, and also made up more than 59 000 fatalities in the year 2008 in the USA [(4)]. Additionally, in 2008, influenza as well as pneumonia with each other was the 7th cause of death for those aged 1- 24 years and also for those aged 65 years or older [(4)].

The occurrence of pneumonia and pneumonia mortality are both greater in the elderly population, and also as human life span remains to raise, it is anticipated that pneumonia fatalities will additionally raise [(1,2)]. The virus causing pneumonia in children and also adults are comparable, and also the majority of respiratory pathogens are transferred successfully in between generations within homes. In the United States, avoiding pneumonia in children by immunizing versus pneumococcal disease has resulted in less pneumonia in adults [(5)]. Nonetheless, little is understood about adult pneumonia in developing nations, as well as study is unusual outside the context of emerging infections (6).

Over the past 2 years, short-term death for patients hospitalized for pneumonia has remained to decline, although that hospitalized patients have an enhanced worry of comorbid health problems as well as a bigger proportion are confessed to an ICU within a day of admission. Although it is not possible to show a causal association in between improvements in the efficiency prices of evidence-based procedures of care for pneumonia and the declining mortality from this disease, these adjustments in outcomes and procedures allow one in conclusion that we are advancing the needle for quality of take care of patients with pneumonia thus far in the 21st century. Pneumonia in patients with Renal disease is connected with enhanced a hospital stay, cardiovascular events, as well as death [(7,8,9)]. The pneumonia-related mortality price of patients with Renal disease is 14 to 16-fold greater than that of the basic populace [(8)]. The risk of inpatient pneumonia and also death within 30 days is raised with the decline of kidney feature in patients with chronic renal disease [(9)]. Advanced

age as well as comorbidity are connected with raised death in patients confessed to the health center as a result of pneumonia [11,12]. Offered the diabetes mellitus (DM), breathing disease, and chronic difficulties, such as kidney failing, cardiovascular disease, a greater risk of pneumonia implications on patient's health, it is plausible that diabetic issues may anticipate increased extent of pneumonia [13].

The goals of this study were to determine whether pneumonia has implications on patients admitted to KKH, and what are the implications on patients with chronic disease such DM, Epilepsy, HTN, and COPD.

2. METHODS AND MATERIALS

A prospective cohort study was performed, this study was conducted at King Khalid hospital (KKH) in Hail City, North of Saudi Arabia, between the period of 2015 and 2016. Data were collected by a prospective reviewing the patient's medical records admitted to the hospital because of pneumonia in one year long (2015-2016). The following data were collected: Age, Sex, Nationality, co-morbid diseases; (Respiratory disease as such; COPD, cardiac disease, renal diseases, central nervous system (epilepsy), and DM). implications of pneumonia were assigned as one of three outcomes, (A) Discharge Against Medical Advice (DAMA), (B) Patients death and (C) Normal patients discharge.

Statistical analysis:

Data were entered and analyzed using SPSS package (Release 22.0, Chicago, IL, USA). Descriptive statistics were performed as appropriate, including frequencies for variables, mean ± standard deviation and cross tabulations. Statistical significance was set at <0.05 throughout the analysis.

3. RESULTS

Records of 202 patients with diagnosed pneumonia were reviewed of the period between, 2015 – 2016 in KKH, 55% of patients were male and 45% were female (**Figure1**). Of these patients, 55% were males and 87.6% which means 177 out of 202 patients were Saudis. the mean age of study population was 32 years old, the youngest patient was 10 months old and the eldest was 101 years old. As for the admission period the shortest took 1 day while the longest were 48 days, the mean of 6 days.

Most of the patients had no HTN (156 patients: 77,2%). 154 patients (76,2%) had no DM, since 23,8% (48) of them had DM. Concerning heart diseases most of the patients (170 patients 84,2 %) had no problem. 6 patients (3%) had CHF, 7 patients (3,5%) had IHD, 4 patients (2%) had DCM and the rest 15 patients (7,4%) had other problems. As for the renal disorders 192 patients (95%) had no problem, just 5% of the patients had renal failure. Respiratory disease we can see that more than half of the patients (60,4%) had no problem. 36 patients (17,8%) had asthma, 4 patients (2%) had COPD and 40 patients (19,8%) had others. Just 17 patients (8,4%) had epilepsy so the most of them (91,6%) did not suffer from epilepsy. 5 patients (2,5%) had Down syndrome. As for the outcome 28 patients (13,9%) had DAMA, for 17 patients (8,4%) death and the rest (77,7%) had normal discharge (More detailed below).

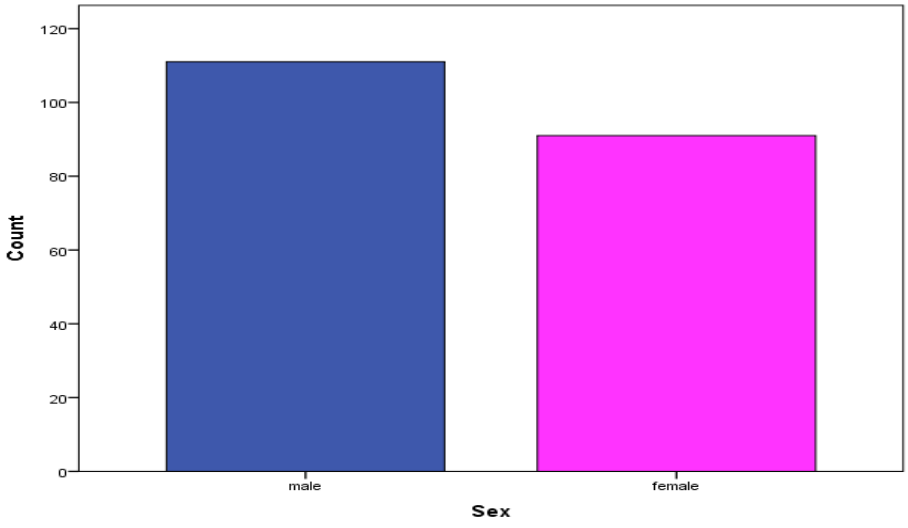

Figure 1: Gender distribution in our study

One patient with pneumonia could have more implications at the same time, and this can show as significant chronic diseases has implications on patients with pneumonia, and in other words, also pneumonia can have different implications on patients with different chronic disease mentioned previously. Pneumonia has different implications on patients with different chronic diseases, as for examples the pneumonia can be serious complications in patients with Respiratory chronic disease such as COPD.

Normal discharge reached the highest number in those groups where patients had no implications (HTN no, DM no, Heart no, Renal no, Epilepsy no, Down syndrome no) (**Tables 1&2&3&4&5&7**). It was the lowest in DCM and highest in no down syndrome. 34 patients had it with HTN, 32 with DM, 4 with CHF, 5 with IHD, 4 with DCM and 9 with other heart problems. 8 patients who had renal failure had normal discharge outcome. As for the respiratory problems 30 with asthma, 3 with COPD and 33 with other respiratory problems. 16 patients' with epilepsy and 5 with down syndrome's outcome was significant (**Tables 1&2&3&4&5&7)**.

Table 1: Implications of Pneumonia on Hypertension patients

		Outcomes			
		DAMA	Death	Normal discharge	Total
HTN	Yes	3	9	34	46
	No	25	8	123	156
Total		28	17	157	202

Table 2: Implications of Pneumonia on diabetes mellitus patients

		Outcomes			
		DAMA	Death	Normal discharge	Total
DM	Yes	7	9	32	48
	No	21	8	125	154
Total		28	17	157	202

Table 3: Implications of Pneumonia on cardiac diseases patients

		Outcomes			
		DAMA	Death	Normal discharge	Total
Heart	Non	25	10	135	170
	CHF	1	1	4	6
	IHD	0	2	5	7
	other	2	4	9	15
	DCM	0	0	4	4
Total		28	17	157	202

Table 4: Implications of Pneumonia on patients with renal dysfunction

		Outcomes			
		DAMA	Death	Normal discharge	Total
Renal	Renal failure	1	1	8	10
	No	27	16	149	192
Total		28	17	157	202

Table 5: Implications of Pneumonia on patients with Respiratory diseases

		Outcomes			
		DAMA	Death	Normal discharge	Total
Respiratory	Asthma	3	3	30	36
	Non	19	12	91	122
	COPD	1	0	3	4
	Other	5	2	33	40
Total		28	17	157	202

Table 6: Implications of Pneumonia on epileptic patients

		Outcomes			
		DAMA	Death	Normal discharge	Total
Epilepsy	yes	0	1	16	17
	no	28	16	141	185
Total		28	17	157	202

Table 7: Implications of Pneumonia on Down syndrome patients

		Outcomes			
		DAMA	Death	Normal discharge	Total
Down syndrome	yes	0	0	5	5
	no	28	17	152	197
Total		28	17	157	202

Death was the lowest outcome as pneumonia implication on patients with chronic disease. With cardiac disease 1 patient with CHF, 2 patients with IHD and 4 with other heart problems has died. With HTN 9 patients died. 1 patient with renal failure, 3 with asthma and 2 with other respiratory problems and 1 patient's with epilepsy outcome was death (**Table 8**). DAMA was also high in group "no" as for the implications. Beside that it was noticeable in respiratory. 3 patients who had asthma, 1 patient who had COPD and 5 patients with another problems outcome was DAMA. For HTN only 1 patient had DAMA just like renal failure. Patients with down syndrome and epilepsy had no DAMA. Without implications the number of the patients was between 21-28 in each group with no chronic disease. Normal discharge is the most common outcome followed by DAMA and death lastly (**Table 8**).

Table 8: Implications outcomes of pneumonia

Final outcomes		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	DAMA	28	13,9	13,9	13,9
	Death	17	8,4	8,4	22,3
	Normal discharge	157	77,7	77,7	63,8
	Total	202	100,0	100,0	100,0

4. DISCUSSION

In our study 202 patient's records were reviewed in KKH in hail city with pneumonia, and some of these patients as for having DM is the most likely implication of pneumonia because 48 patients (23,8%) had it. HTN follows it with 46 patients (22,8%) Other respiratory problems are also high (40 patients 19,8%) Epilepsy and Down syndrome are not common for the implications.

Several research studies have evaluated the effects rates for pneumonia on patient's readmission; these differ extensively depending on the population researched, geographical location, as well as other factors. The literary works recommends that readmission to the health center after an episode of pneumonia is a fairly frequent occasion, especially among the senior and patients with numerous comorbidities [13,14].

The risk of general pneumonia was greater in patients with renal disease compared to in patients with other comorbidities (COPD, bronchial asthma, and diabetes mellitus). The risk of inpatient pneumonia was additionally the highest in patients with renal disease. These results recommended that renal disease could be an individually important factor to the increased risk of pneumonia [15,16].

In a similar research with virtually 12 million participants, the 30-day readmission rate for patients released after a pneumonia a hospital stay was 20.1%, constant with the price reported in various other researches [17]. In our research the typical released were the most common outcomes amongst patients without any chronic disease, and also no information for readmission were discovered in the patient's records. In one more research study based upon hospital and outpatient Medicare declares information from 2006-2009, the 30-day pneumonia readmission rate corresponded at 18.3% (18). In this research, mortality rate for patients admitted to the hospital with a principal medical diagnosis of pneumonia was

relatively high at 8.4%. In all patients, we located that DM was linked with increased mortality. On top of that, those with DM on admission were significantly most likely to pass away than patients with regular sugar degrees on admission. According to the other researches likewise the risk of death enhanced as admission sugar levels increased. Scientists have actually also evaluated pneumonia effects in the general population. In a retrospective evaluation of patients with culture-confirmed bacterial pneumonia, 30-day readmission occurred in 19.3% of patients [(19)].

The limitations of this study is as we could not determine the exact stage of every chronic disease. Also limitation of studies determines the implications of pneumonia on patients with chronic diseases such HNT, DM, and Respiratory diseases. Therefore, furthere research should take into consideration the objective of this study, and analysis more dilated data, as readmission to hospital.

5. CONCLUSION

Pneumonia mostly has normal implications on patients as for most of this study were normally discharged as for the outcomes. It's followed by DAMA which was the highest in no epilepsy and no down syndrome. DM was the most risk for implications of pneumonia in this group followed by asthma and other respiratory problems, therefore DM is linked with an increased risk for pneumonia-related hospitalization. Death had no strong effect on the implications. But as for this study showed 17 patients have died showing the high risk of pneumonia implications on patient's life if they have more other chronic disease that can worsen the situation.

REFERENCES

[1] Scott J.A., et al. Aetiology, outcome, and risk factors for mortality among adults with acute pneumonia in Kenya. Lancet. 2000;355:1225–1230.

[2] National Center for Health Statistics (NCHS); Centers for Disease Control and Prevention (CDC) FastStats: Pneumonia. Last Updated February 2014. https://www.cdc.gov/nchs/data/nvsr/nvsr65/nvsr65_04.pdf. Accessed June 20, 2017.

[3] File TM, Jr, Marrie TJ. Burden of community-acquired pneumonia in North American adults. *Postgrad Med*. 2010 Mar;122(2):130–141.

[4] National Heart, Lung, and Blood Institute. Morbidity and mortality: 2012 chart book on cardiovascular, lung, and blood diseases. Bethesda, Maryland: US Department of Health and Human Services. Public Health Service. National Institutes of Health; Feb, 2012. [Accessed June 21, 2017]. www.nhlbi.nih.gov/resources/docs/2012_ChartBook.pdf.

[5] Metlay J.P., Fishman N.O., Joffe M., Edelstein P.H. Impact of pediatric vaccination with pneumococcal conjugate vaccine on the risk of bacteremic pneumococcal pneumonia in adults. Vaccine. 2006;24:468–475.

[6] Scott J.A., et al. Aetiology, outcome, and risk factors for mortality among adults with acute pneumonia in Kenya. Lancet. 2000;355:1225–1230.

[7] Viasus D, Garcia-Vidal C, Cruzado JM, et al. Epidemiology, clinical features and outcomes of pneumonia in patients with chronic kidney disease. *Nephrol Dial Transplant* 2011; 26:2899–2906.

[8] Collins AJ, Foley RN, Gilbertson DT, et al. The state of chronic kidney disease, ESRD, and morbidity and mortality in the first year of dialysis. *Clin J Am Soc Nephrol* 2009; 4 Suppl 1:S5–11.

[9] James MT, Quan H, Tonelli M, et al. CKD and risk of hospitalization and death with pneumonia. *Am J Kidney Dis* 2009; 54:24–32.

[10] Mortensen EM, Kapoor WN, Chang CC, Fine MJ: Assessment of mortality after long-term follow-up of patients with community-acquired pneumonia. Clin Infect Dis 37:1617–1624, 2003

[11] Thomsen RW, Riis A, Nørgaard M, Jacobsen J, Christensen S, McDonald CJ, Sø- rensen HT: Rising incidence and persistently high mortality of hospitalized pneumonia: a 10-year population-based study in Denmark. J Intern Med 259:410– 417, 2006

[12] Koziel H, Koziel MJ: Pulmonary complications of diabetes mellitus: pneumonia. Infect Dis Clin North Am 9:65–96, 1995

[13] File TM, Jr, Marrie TJ. Burden of community-acquired pneumonia in North American adults. *Postgrad Med*. 2010 Mar;122(2):130–141.

[14] Fry AM, Shay DK, Holman RC, Curns AT, Anderson LJ. Trends in hospitalizations for pneumonia among persons aged 65 years or older in the United States, 1988-2002. *JAMA*. 2005 Dec 7;294(21):2712–2719.

[15] Agarwal R, Bunaye Z, Bekele DM, et al. Competing risk factor analysis of end-stage renal disease and mortality in chronic kidney disease. *Am J Nephrol* 2008; 28:569–575.

[16] Hwang SJ, Lin MY, Chen HC, et al. Increased risk of mortality in the elderly population with late-stage chronic kidney disease: a cohort study in Taiwan. *Nephrol Dial Transplant* 2008; 23:3192–3198.

[17] Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. *N Engl J Med*. 2009 Apr 2;360(14):1418–1428. Erratum in: *N Engl J Med*. 2011 Apr 21;364(16):1582.

[18] Lindenauer PK, Bernheim SM, Grady JN, et al. The performance of US hospitals as reflected in risk-standardized 30-day mortality and readmission rates for Medicare beneficiaries with pneumonia. *J Hosp Med*. 2010 Jul-Aug;5(6):E12–E18.

[19] Shorr AF, Zilberberg MD, Reichley R, et al. Readmission following hospitalization for pneumonia: the impact of pneumonia type and its implication for hospitals. *Clin Infect Dis*. 2013 Aug;57(3):362–367.

[20] Jasti H, Mortensen EM, Obrosky DS, Kapoor WN, Fine MJ. Causes and risk factors for rehospitalization of patients hospitalized with community-acquired pneumonia. *Clin Infect Dis*. 2008 Feb 15;46(4):550–556.