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Site presentation

Hospital-based surveillance for severe acute respiratory infection (SARI) cases was established in SKIMS on November 2015. Sheri Kashmir Institute of Medical Sciences is the apex tertiary care center cum referral center in capital Srinagar of the northern most Indian state of Jammu and Kashmir. The institute is an 800 plus bedded facility which is the main referral center and caters to the whole of the Kashmir valley. The Influenza laboratory of SKIMS caters to the hospital needs and apart from surveillance activities also provides outbreak investigation facilities to the state. The SKIMS Influenza lab, employs one scientist (Mr Hyder Mir), one research assistant (Ms Saima Ali) and 2 technicians (Mr Mubashir Khan, Ms Masooma Showkat).

Methods

During the study period from October 2017 till April 2018, all inpatients with suspected respiratory infections who were admitted overnight to the study hospitals were screened daily. If a patient met the European Center for Disease Control (ECDC) ILI case definition, a respiratory specimen was tested for influenza and other respiratory pathogens. A case record form captured demographics, history of presenting illness, co-morbidities, disease course and outcome. Nasal and throat swabs were collected, transported in VTM and tested for influenza, RSV, PIV, Rhino, Adeno, PIV and HMPV viruses by real-time RT PCR (QuantStudio 3, Applied Biosystems, USA). Influenza A and B positive samples were further subtyped into A/H3 and A/H1 and B/Victoria and B/Yamagata lineages respectively.

Results

- From October 2017 to April 2018, a total of 708 patients with suspected respiratory infections were assessed. Of these, 666 (94%) met the ECDC- ILI case definition and were included in the study.
- Of the 666 recruited cases, 354 (53%) were male. Children aged less than 5 years accounted for 5.4% (n=36) of the eligible patients.
- Of the 666 samples tested, 207 were positive for any virus including 201 single infection and 06 mixed infection.
- Influenza A was the predominant virus detected in 126 (19%) [A/H1N1=84; A/H3N2=42] admitted cases followed by Rhino virus (5%), RSV (3.4%), Influenza B (2.2%) [B/Yamagata=14; B/Victoria=01], HMPV (1%), Adeno (0.75%) and PIV (0.60%).
- Patients without co-morbidities accounted for about 24.6% of the admissions whereas 39.7% of the patients had ≤ 2 co-morbidities and 35.5% had ≥ 2 morbidities.
- The need for intensive care and mechanical ventilation was found statistically significant between virus-positive and virus-negative patients. In-hospital deaths among virus-positive and virus-negative patients were non-significant.
- 88 (13.2%) out of 666 patients were prescribed antivirals for the current ILI episode.
- The vaccination rate among the patients was found to be 3.3%.
- A total of 49 deaths (including 2 pregnant females) were observed during the study period in patients positive for one or more respiratory pathogen which included A/H1N1(n=23), A/H3N2 (n=7), influenza B (n=02), RSV (n=06), HMPV (n=01), Adeno (n=01), Rhino (n=11).

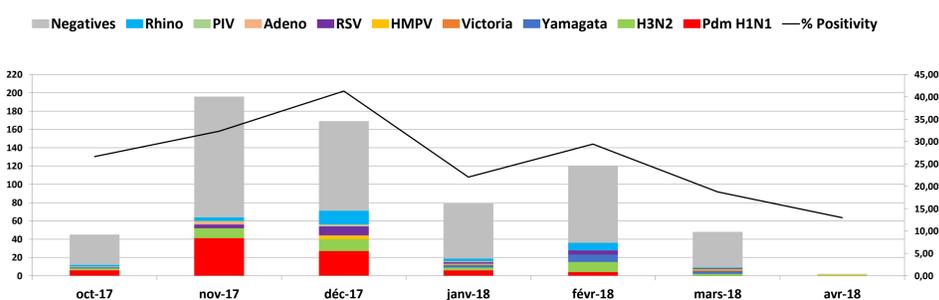


Fig 1. Srinagar-India: Monthly distribution of respiratory pathogens among hospitalized patients

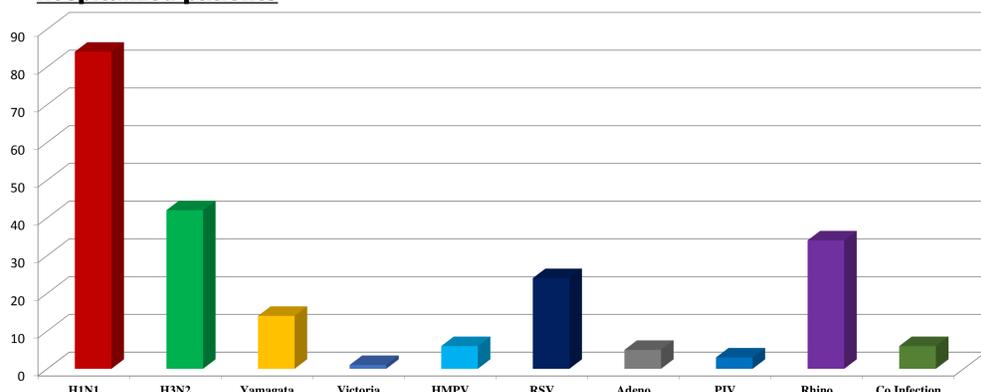


Figure 2: Distribution of individual viruses among hospitalized patients

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Table.1 Characteristics of study patients vs RT PCR results

	Virus Positive (n=215)	Virus Negative (n=437)
Males	139 (64.6)	97 (22)
Females	105 (49)	240 (55)
Symptoms		
Fever	140 (65)	356 (81.4)
Malaise	153 (71)	406 (93)
Headache	129 (60)	276 (58.3)
Myalgia	95 (44)	255 (54)
Cough	154 (71.6)	403 (92.2)
Sore throat	23 (10.6)	80 (18.3)
Breathlessness	152 (70.6)	403 (92.2)
Number of underlying co-morbidities		
0	77 (35.8)	73 (16.7)
1-2	123 (57.2)	308 (70.4)
≥ 2	15 (7)	56 (12.8)
Underlying Co-morbidities		
Cardiovascular disease	64 (29.7)	228 (52)
COPD	72 (33.4)	174 (81)
Asthma	1 (0.46)	5 (1.1)
Diabetes	27 (12.5)	82 (18.7)
Chronic renal disease	6 (2.7)	36 (8.2)
Chronic neuromuscular disease	21 (9.7)	41 (9.3)
Chronic liver disease	0	0
Auto immune disease	10 (4.6)	16 (3.6)
Rheumatologic disease	0	4 (0.91)
Hospitalizations in past 12 months		
0	141 (65.5)	270 (61.7)
1	47 (22)	100 (22.8)
≥ 2	27 (12.5)	67 (15.3)
OPD visits in past 3 months		
0	55 (25.5)	116 (26.5)
1	29 (13.4)	43 (9.8)
≥ 2	131 (61)	278 (63.6)
Vaccination ≥ 14 days from symptom onset	4 (1.8)	9 (2)
Pregnancy status		
Pregnant females	06 (2.8)	07 (3.3)
ICU admissions	43 (20.7)	67 (14.5)
Mechanical Ventilation	36 (17.3)	52 (11.3)
In-hospital Deaths	49 (23.6)	102 (22.2)

Key aspects & challenges

Keys aspects:

- Influenza A constitutes the commonest respiratory pathogen among admitted with ARI in temperate north India.
- Mortality is high in influenza positive cases (n=30) and is more frequent in patients with comorbidites and pregnancy.
- Vaccination rates among the recruited patiens are very low.

Challenges:

- The capacity needs augmentation and further funding is required to continue surveillance.

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