



Unpredictable local trends: Epidemiology of patients hospitalized for influenza like illness in 2015-16 influenza season in Turkey



Global Influenza
Hospital Surveillance
Network

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Introduction: Influenza-like illness (ILI) can be an important diagnosis for acute admissions in the influenza season. The primary objective of this study was to determine the epidemiology of influenza cases among acute admissions with ILI during the 2015-2016 season in selected hospitals in Turkey.

Methods: A prospective, epidemiological study was conducted in accordance with the core protocol provided by Global Influenza Hospital Surveillance Network. Patients hospitalized in the previous 24-48 hours in the predefined wards or emergency rooms were screened. Institutionalized patients, non-residents, those who were hospitalized in the previous 30 days and those not giving informed consent were excluded. Nasopharyngeal /pharyngeal swabs were obtained. Real-time PCR based, multiplex Influenza A,B,C Kit (TIBMOLBIOL, Germany) was used for detection of Influenza pathogens on Bio-Rad CFX 96 platform (Bio-Rad, USA). Influenza H1, H3 subtype, Influenza B Yamagata and Victoria lineages were tested with real-time RT-PCR method using a Bio-Rad CFX 96 instrument with CDC primers and probes according to the CDC protocol.

Results: Fieldwork started on December 21, 2015 (52nd week) and ended on April 01, 2016 (13th week). A total of 1351 patients were screened for enrollment and 774 patients (57.3% of the initial screened population) were eligible for swabbing. The patient population had a high chronic disease burden; 85.7% of the patients 5 years and older had at least one chronic disease condition. Overall, influenza positivity was detected in 142 patients (18.4%) (Table 1). The influenza A (H1N1) (47.9%) and A (H3N2) (40.1%) were the predominant subtypes. The number of cases peaked at the 2nd week of 2016 with a predominance of influenza A H1N1pdm09 (Figure 1). While only 7.8% of the cases were B Yamagata lineage, no B Victoria lineage was detected. Almost all cases of influenza B were among patients under 50 years of age (Figure 2). Overall vaccination rate was 7.2% in the particular season.

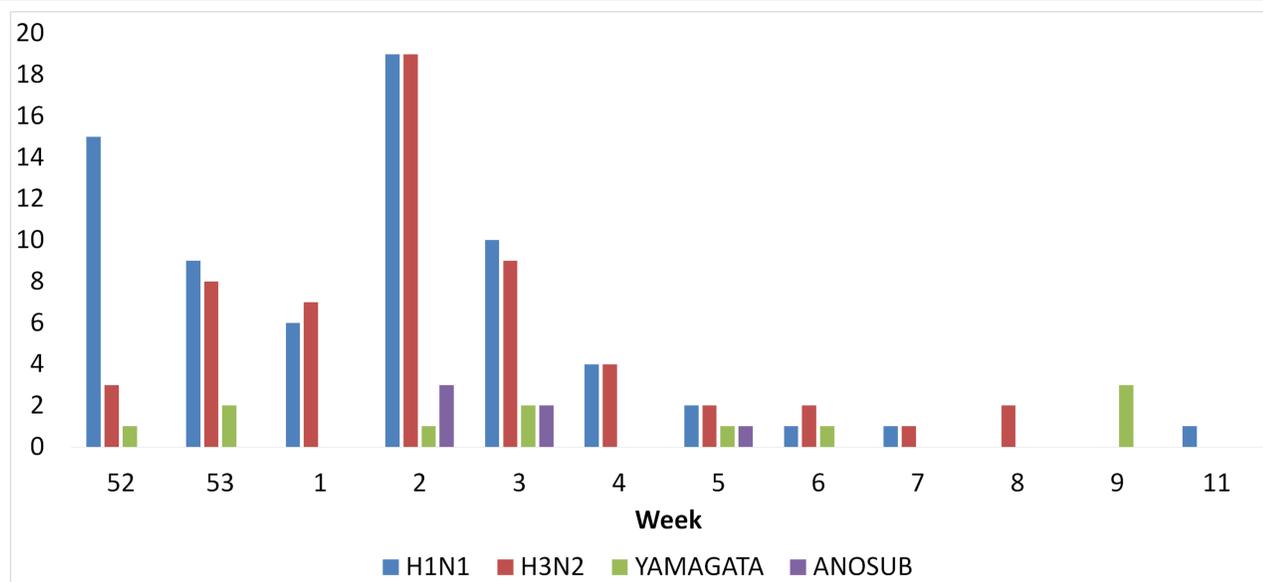


Figure 1. Weekly distribution of number of influenza viruses during the study period.

Table 1: Results of the RT-PCR results

	Number of patients (%)		
	≥5 years	<5 years	Total
Screened	883	468	1351
Included	399	375	774
RT-PCR result			
Influenza negative	308 (77.2)	324 (86.4)	632 (81.6)
Influenza positive	91 (22.8)	51 (13.6)	142 (18.4)
Subtype and lineage	Number of patients (%) within the influenza positive cases		
A(H1N1) pdm09	49 (53.8)	19 (37.3)	68 (47.9)
A(H3N2)	35 (38.5)	22 (43.1)	57 (40.1)
A not subtyped	3 (3.3)	3 (5.9)	6 (4.2)
B Yamagata	4 (4.4)	7 (13.7)	11 (7.8)
B Victoria	0	0	0
B not subtyped	0	0	0

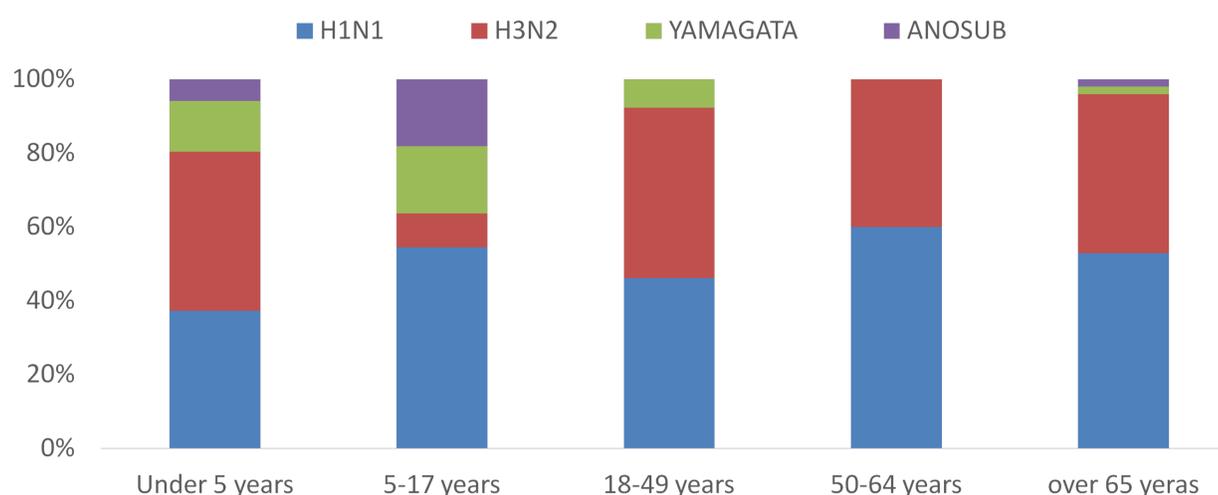


Figure 2. Distribution of virus types in different age segments

Discussion: Influenza A positivity rate and the timing of the peak were similar to those of the national sentinel and ILI surveillance in Turkey [1,2]. The most striking differences from the previous year's surveillance were the scarcity of influenza B viruses among all influenza viruses in the 2015-16 season when compared to the 2014-15 season (7.8% vs 54.3%, respectively) and the early ending of the season. Influenza A (H1N1) was the predominant type (58.4%) among the isolates overall in the global study in the 2015-16 season. Interestingly, overall detection rate of influenza B was approximately 25% in the global study population, which was significantly higher than the influenza B detection rate in Turkey. In Europe, influenza activity started in week 51/2015 and lasted until week 20/2016. The season was dominated by influenza A(H1N1)pdm09 viruses. ECDC surveillance data revealed that influenza B virus circulation increased, following the decline of influenza A virus circulation but continued to co-circulate with A(H1N1)pdm09m in Ireland, France and Spain for most of the season [3]. In USA, the 2015-2016 influenza activity started and peaked later than the previous three flu seasons. While influenza A(H3N2) viruses predominated early in the season, influenza A(H1N1) viruses emerged later and became the predominant virus for the entire season. Influenza B viruses were more commonly identified from mid-April through mid-May [4]. As evident above, the local trends of seasonal influenza can be different from the global trends in an unpredictable pattern. Virological characterization of influenza isolates might help to understand the dynamics of the seasonal influenza activity. In spite of all the efforts to choose the correct strains and to produce a highly protective influenza vaccine every year, the efficacy of seasonal influenza vaccines is greatly reduced when predicted vaccine strains antigenically mismatch with the actual circulating strains [5]. In countries with very low influenza vaccination rates such as Turkey, the vaccine-circulating strain mismatch has further untoward effects on herd immunity.

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