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Awareness towards Chikungunya virus infection risk by general practitioners in Rome: a questionnaire based survey before the 2017 outbreak

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ABSTRACT:

- Autochthonous cases of Chikungunya (CHIKV) have been recently detected in Rome. A survey was conducted prior to the 2017 outbreak to assess knowledge, attitude, and practices towards CHIKV infections on 103 randomly selected general practitioners (GPs), practicing in the centre of Rome. Only 24.3% were aware of CHIKV and completed the interview. Among completers, the knowledge of basic elements of CHIKV infection was insufficient. Only two thirds of them were able to identify possible CHIKV cases in hypothetical clinical scenarios presented by the interviewer. Our study highlights the need to improve GP knowledge towards CHIKV, as a necessary step to establish an efficacious epidemic surveillance.
- **Keywords:** Chikungunya, Vector borne diseases, General practitioners.

INTRODUCTION

Chikungunya virus (CHIKV) infection causes a clinical syndrome with fever, intense and symmetric arthralgia, headache, and possible maculo-papular (or bullous in children) skin eruption¹. Differently from other arbovirose, CHIKV infection is symptomatic in the majority of the cases, with only 10-15% of infected patients having an asymptomatic seroconversion. The disease's severity is higher in neonate, young children and elderly people². Complications are infrequent, mainly ocular disorders, encephalitis, myocarditis, and hepatitis¹. A more common post-acute complication is a chronic and disabling joint pain, usually lasting for few months^{3,4}. CHIKV infection may have a direct impact on pregnancy with a higher risk of abortion in the 1st trimester and mother-to-child transmission in the 3rd trimester. There is no vaccine to prevent or medications to treat CHIKV infection, but symptoms are usually mild leading patients to refer to their GPs. Thus, GPs may play the role of counsellor for individuals travelling to affected areas in order to reduce the risk of mosquito bites and, in case of local outbreak,

play a crucial role for early detection, prevention of infection and surveillance. Autochthonous cases of CHIKV⁵⁻⁷ infection have been detected in Southern Europe, with the most recent Italian outbreak in Rome and the Lazio region being the largest so far⁸. The aim of this study is to assess the GP's awareness of CHIKV and the ability to early diagnostics of cases. The survey was conducted through interviews on knowledge, attitude and practice (KAP) towards CHIKV in the city of Rome before the current CHIKV outbreak⁸.

METHODS

GP participants to the survey were selected from the official lists provided by the health local authorities (Azienda Sanitaria Locale or ASL) operating in Rome municipality. At the time of the study, five ASL were covering the Rome municipality area, offering free healthcare to residents. Among the 2485 GPs, a sample of 103 was selected with computer generated random numbers from those operating in the central areas of Rome municipali-

ty. In case of participation refusal, the next GP of the list was selected. The selection of the central area of Rome municipality was based on three main reasons: 1) most residents have a high socioeconomic level and are most likely to travel to tropical or subtropical areas for vacation; 2) communities of immigrants from tropical/sub-tropical countries are established in some of the central neighbourhoods; 3) the highest presence of international tourists.

The selected GPs were contacted in person at their work place by two previously trained medical doctors (residents in hygiene and preventive medicine at Sapienza University of Rome). After informed consent, a questionnaire was administered face-to-face. The acceptability and the logical structure of the questionnaire have been checked during pre-testing session on 4 GPs. The anonymous questionnaire was composed by 26 questions (8 socio-demographic, 18 on knowledge, attitude and practices toward CHIKV infection). After the socio-demographic section, a conditional question ("Have you ever heard about CHIKV infection?") was directed the responder to continue or stop the interview. Moreover, before continuing or stopping the interview, all participants were asked if they would have liked to receive more information or training on vector borne diseases (VBDs).

The knowledge section was composed by 11 questions, 9 of them extracted from the "Chikungunya communication toolkit" of ECDC (European Centre for Diseases prevention and Control)⁹. Additional questions were related to knowledge on CHIKV incubation period, and awareness of previous outbreaks in Italy. In the attitude section, we assessed the degree of agreement on three statements regarding severity of clinical presentation of CHIKV patients, CHIKV outbreak risk from imported cases, and importance of early notification of probable CHIKV cases by GPs. In the practice section, GPs were asked to categorize as non-case or probable case patients with symptoms compatible with CHIKV and different epidemiological scenarios.

At the end of the questionnaire administration, all GP participants received some informative materials.

RESULTS AND DISCUSSION

A total of 103 GPs of the central areas of Rome municipality were interviewed during 2012. Only 2.9% refused to participate because of "lack of time" and they were replaced by the next GP in the list. The majority of interviewed GPs were males (70.9%), with an average age of 60 years (range 41-65 years), with medical specialization diploma (79.4%) and a long experience as medical doctor (97.1% holding a medical degree since >15 years) and as GP (only 4.9% had a length of service <10 years). Almost 64% of participants estimated to perform > 15 daily consultations, and 37.9% reported to have performed one or more VBD diagnoses during their professional life. Among the latter, malaria was the most frequent (50%), while CHIKV infection was diagnosed in 2 cases (4.3%).

In total, only 25 out of 103 GPs (24.3%) had heard about CHIKV and then completed the interview responding to KAP questions toward CHIKV infection. The results

are summarized in Table 1. Generally, many aspects of the CHIKV infection were ignored by the GPs. Endemic areas, duration of the incubation period, and long-term complications were the less known (from 20% to 32% of correct answers), and 84% of GPs were not aware about specific preventive initiatives led by health authorities. More than a half (from 56% to 68%) of GPs knew other aspects of CHIKV infection (Table 1). The attitude section was answered by 16 GPs only. Of those, the majority of GPs agreed with the clinical relevance of CHIKV infection, as well as with the statement that an early notification of possible cases is an important contribution to lower the local outbreak risk. Notably, 50% of GPs did not consider the risk of CHIKV outbreak by imported cases in the city of Rome as relevant. This result is of particular concern, because in Rome, especially in the central areas, there is a large community of people travelling from/to Asian countries, including those endemic for CHIKV infection. Moreover *Ae. albopictus* is abundant during the summer season in Rome¹⁰, leading the municipality to organize few informative campaigns to citizens to fight against this annoying and invasive mosquito. Regarding the practice toward CHIKV infection, at least about half of GPs answering to this section identified correctly a probable CHIKV case based on the clinical presentation associated to the three possible epidemiological/entomological scenarios proposed through the questionnaire, with frequency of correct answers ranging from 48% to 68%. Participants to the present survey were generally senior doctors, holding an additional (other than GP) medical specialization diploma, having a long experience and a consistent burden of daily patient consultations. All GPs were aware that early notification of suspected cases is the pillar of the outbreak prevention strategy and half of them were aware of previously reported CHIKV outbreak in Italy. However, all responders have urged to benefit of specific training on VBDs or, at least, to receive informative materials.

Although a low rate of refusal to participate, only 1 out of 4 GPs interviewed was aware of CHIKV infection and completed the interview. Among these, the knowledge of basic elements of CHIKV infection (i.e. symptoms and long-term complications, route of transmission and consequent necessary preventive measures, incubation period) was insufficient. More importantly, only few of them were able to correctly classify the hypothetical clinical scenario as possible CHIKV case.

Possible explanations of the lack of awareness could be related to a mix of seniority of GPs participants, increased relevance of VBDs in temperate zones because of vectors spread in the last decade only, carelessness of health authority on GPs information/training gap on VBDs.

CONCLUSIONS

The KAP levels toward CHIKV infection among GPs of the city of Rome is globally unsatisfactory and insufficient, highlighting the need to promote specifically capacity-building activities toward VBDs as necessary step to establish an efficacious surveillance system in a non-endemic country.

Table 1. Knowledge, attitudes and practice (KAP) toward CHIKV infection among General Practitioners interviewed in the city of Rome, Italy. The KAP sections of the questionnaire were delivered to GPs that answered to have heard about CHIKV (n=25 out of 103). The KAP sections were delivered to GPs that answered to have heard about CHIKV (n=25 out of 103).

Section of questionnaire	Statement	Item	Correct answers (N)	%	
Knowledge (n=25)		Endemic areas	5	20%	
		Vector	14	56%	
		Symptoms	16	64%	
		Incubation period	8	32%	
		Long term complications	8	32%	
		Treatment	14	56%	
		Route of transmission and prevention of infection measures when travelling in endemic areas	17	68%	
		Prevention of vector's breeding sites at home	14	56%	
		Awareness of previous outbreaks in Italy	14	56%	
		Awareness of prevention initiatives by health authorities	4	16%	
		How to report of probable cases (notification procedure of cases)	15	60%	
		Attitude (n=16)	CHIKV infection cause a clinical presentation that should not be underestimate because of possible severe clinical complications	Mostly disagree	0
Neutral	0			0%	
Mostly agree	16			100%	
CHIKV outbreak risk from imported cases in Rome is high and should not be underestimated	Mostly disagree			6	37.5%
	Neutral			2	12.5%
	Mostly agree			8	50%
The early notification of probable CHIKV cases by GPs will contribute to keep the outbreak risk low in the city of Rome	Mostly disagree		0	0%	
	Neutral		0	0%	
	Mostly agree		16	100%	
Practice (n=25)	It is a probable case a patient with acute onset of fever (>38.5°C) and severe/ incapacitating arthralgia, not explained by other obvious medical conditions, and...	 returned in Italy from a tropical or subtropical area within the past 7 days	17	68%
		with no history of recent travels abroad, but residing in an area where "tiger mosquito" is abundant	12	48%
		with no history of recent travels abroad nor residing in an area where "tiger mosquito" is present	15	60%

CONFLICT OF INTERESTS:

None

REFERENCES

- Pialoux G, Gatüzère BA, Jauréguiberry S, Strobel M. Chikungunya, an epidemic arbovirolosis. *Lancet Infect Dis* 2007; 7: 319-327.
- Das T, Jaffar-Bandjee MC, Hoarau JJ, Krejbich Trotot P, Denizot M, Lee-Pat-Yuen G, Sahoo R, Guiraud P, Ramful D, Robin S, Alessandri JL, Gauzere BA, Gasque P. Chikungunya fever: CNS infection and pathologies of a re-emerging arbovirus. *Prog Neurobiol* 2010; 91: 121-129.
- Feldstein LR, Rowhani-Rahbar A, Staples JE, Weaver MR, Halloran ME, Ellis EM. Persistent Arthralgia Associated with Chikungunya Virus Outbreak, US Virgin Islands, December 2014–February 2016. *Emerg Infect Dis* 2017; 23: 673-676.
- Soumahoro MK, Gérardin P, Boëlle PY, Perrau J, Fianu A, Pouchot J, Malvy D, Flahault A, Favier F, Hanslik T. Impact of Chikungunya virus infection on health status and quality of life: a retrospective cohort study. *PLoS One* 2009; 4: e7800.
- Rezza G, Nicoletti L, Angelini R, Romi R, Finarelli AC, Panning M, Cordioli P, Fortuna C, Boros S, Magurano F, Silvi G, Angelini P, Dottori M, Ciufolini MG, Majori GC, Cassone A; CHIKV study group. Infection with chikungunya virus in Italy: an outbreak in a temperate region. *Lancet* 2007; 37: 1840-1846.

6. Delisle E, Rousseau C, Broche B, Leparç-Goffart I, L'Ambert G, Cochet A, Prat C, Foulongne V, Ferre JB, Catelinois O, Flusin O, Tchernonog E, Moussion IE, Wiegandt A, Septfons A, Mendy A, Moyano MB, Laporte L, Maurel J, Jourdain F, Reynes J, Paty MC, Golliot F. Chikungunya outbreak in Montpellier, France, September to October 2014. *Euro Surveill* 2015; 20(17). pii: 21108.
7. Gould EA, Gallian P, de Lamballerie X, Charrel RN. First cases of autochthonous dengue fever and chikungunya fever in France: from bad dream to reality! *Clin Microbiol Infect*; 2010; 16: 1702-1704.
8. Manica M, Guzzetta G, Poletti P, Filipponi F, Solimini A, Caputo B, Della Torre A, Rosà R, Merler S. Transmission dynamics of the ongoing chikungunya outbreak in central Italy: from coastal areas to the metropolitan city of Rome, summer 2017. *Euro Surveill* 2017; 22(44). doi: 10.2807/1560-7917.ES.2017.22.44.17-00685.
9. http://ecdc.europa.eu/en/healthtopics/chikungunya_fever/communicationtoolkit/Pages/Communication_toolkit.aspx.
10. Manica M, Filipponi F, D'Alessandro A, Screti A, Neteler M, Rosà R, Solimini A, Della Torre A, Caputo B. Spatial and temporal hot spots of aedes albopictus abundance inside and outside a South European metropolitan area. *PLoS Negl Trop Dis* 2016; 10: e0004758.