

Fungal endocarditis in children and antifungal prophylaxis

To the editor In the July/August 2019 issue of *Kardiologia Polska (Kardiol Pol, Polish Heart Journal)*, Ammannaya and Sripad¹ presented a review of current knowledge on fungal endocarditis in adult patients. In our opinion, this is a very important issue. The strategy of “hit fast, hit hard” may be the best option for all patients who develop fungal endocarditis or invasive fungal infection, especially after a cardiac surgery.

We would like to ask the authors of the article for additional information regarding the pediatric population. Not only fungal endocarditis but also invasive fungal infections caused by a variety of fungal species are becoming an increasing problem worldwide. *Candida* are the most common fungal pathogens that have been reported to complicate surgical treatment in children with congenital heart diseases. In particular, the *Candida* species have become the seventh most frequent cause of nosocomial sepsis in children.^{2,3} However, currently, species other than *C. albicans* are detected more often.

Apart from that, we would like to ask the authors what they think about antifungal prophylaxis: are there any indications for this, and if so, what group of patients should be targeted then?

ARTICLE INFORMATION

AUTHOR NAMES AND AFFILIATIONS Radoslaw Jaworski, Andrzej Kansy, Bohdan Maruszewski (Department of Cardiothoracic Surgery, Children's Memorial Health Institute, Warsaw, Poland)

CORRESPONDENCE TO Radoslaw Jaworski, MD, PhD, Department of Cardiothoracic Surgery, Children's Memorial Health Institute, al. Dzieci Polskich 20, 04-730 Warszawa, Poland, phone: +48 22 815 73 46, email: radicis@go2.pl

CONFLICT OF INTEREST None declared.

OPEN ACCESS This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (CC BY-NC-ND 4.0), allowing third parties to download articles and share them with others, provided the original work is properly cited, not changed in any way, distributed under the same license, and used for non-commercial purposes only. For commercial use, please contact the journal office at kardiologiapolska@ptkardio.pl.

HOW TO CITE Jaworski R, Kansy A, Maruszewski B. Fungal endocarditis in children and antifungal prophylaxis. *Kardiol Pol.* 2020; 78: 91. doi:10.33963/KP.15155

REFERENCES

- 1 Ammannaya GKK, Sripad N. Fungal endocarditis: what do we know in 2019? *Kardiol Pol.* 2019; 77: 670-673.
- 2 Kumar D, Kumar A, Singh S, Tilak R. Candidemia-induced pediatric sepsis and its association with free radicals, nitric oxide, and cytokine level in host. *J Crit Care* 2015; 30: 296-303.
- 3 Ganer AH, Prodhan P, Stovall SH, et al. Fungal infections and antifungal prophylaxis in pediatric cardiac extracorporeal life support. *J Thorac Cardiovasc Surg.* 2012; 143: 689-695.

Authors' reply We thank Jaworski et al for their interest in our article¹ and greatly appreciate their valuable comments. Fungal endocarditis is increasingly encountered worldwide and poses a problem greater than ever. We fully agree with their assessment of the “hit fast, hit hard” strategy as the only method against this fatal menace and this was emphasized in our article as well.

Also in the pediatric population, the *Candida* species are the prime etiologic agents. However, *C. parapsilosis* accounts for the majority of cases in most contemporary series. In a large series of 221 patients with fungal endocarditis, over 61% of cases were due to *C. parapsilosis*, while the main etiologic agent in adults, *C. albicans*, was implicated only in 27% of cases.² Furthermore, in almost all reported cases of survival, surgical management was necessary to supplement antifungal medical therapy and, hence, it was concluded that in most cases a surgery is obligatory and should be performed as early as possible.

There is a lack of scientific evidence for the efficacy of prophylaxis of infective endocarditis (IE). Since the publication of the 2009 European Society of Cardiology (ESC) guidelines (including the latest 2015 ESC guidelines), antibiotic prophylaxis has been downgraded and is recommended only in patients with the highest risk of IE.³ Pediatric patients with the highest risk of IE include those with homografts, history of IE, untreated cyanotic congenital heart disease, and those with congenital heart disease who have

postoperative palliative shunts, conduits, or other prostheses. Ağin et al⁴ reported the following to be risk factors for the development of *Candida* infections in the pediatric intensive care unit (ICU): a longer stay in the pediatric ICU, mechanical ventilation, a central venous catheter, and total parenteral nutrition. Given that fungal IE is an increasing problem in the ICU—with *Candida* IE occurring significantly more often in patients hospitalized in the ICU than those who were not—there should be a high index of suspicion for fungal IE in the ICU setting, particularly if a patient does not respond to empirical antimicrobial therapy. Therefore, we believe that any decision on implementing antifungal prophylaxis should be made on a case-by-case basis, considering a high-risk status along with other major predisposing factors such as a long ICU stay (>21 days), lack of response to empirical antimicrobial therapy, or diagnosis of other immunocompromised conditions. Aseptic precautions are obligatory when manipulating a venous catheter and performing invasive procedures in order to reduce the rate of healthcare-associated IE. Although prophylaxis should be restricted to high-risk patients with major predisposing factors, preventive measures should be maintained or extended to all patients, in particular to those with a pre-existing cardiac disease or prostheses.

ARTICLE INFORMATION

AUTHOR NAMES AND AFFILIATIONS Ganesh Kumar K. Ammannaya, Ninada Sripad (GKKA: Department of Cardiovascular and Thoracic Surgery, Lokmanya Tilak Municipal Medical College and General Hospital, Sion, Mumbai, India; NS: Department of Microbiology, Goa Medical College, Goa, India)

CORRESPONDING AUTHOR Ganesh Kumar K. Ammannaya, MCH CVTS, FACC, FEBCTS, Department of Cardiovascular and Thoracic Surgery, Lokmanya Tilak Municipal Medical College and General Hospital, Sion, Mumbai – 400022, India, phone: +91 9900409207, email: doc.ammannaya@gmail.com

CONFLICT OF INTEREST None declared.

OPEN ACCESS This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (CC BY-NC-ND 4.0), allowing third parties to download articles and share them with others, provided the original work is properly cited, not changed in any way, distributed under the same license, and used for non-commercial purposes only. For commercial use, please contact the journal office at kardiologiapolska@ptkardio.pl.

HOW TO CITE Ammannaya GKK, Sripad N. Fungal endocarditis in children and antifungal prophylaxis. Author's reply. *Kardiol Pol.* 2020; 78: 91-92. doi:10.33963/KP.15156

REFERENCES

- 1 Ammannaya GKK, Sripad N. Fungal endocarditis: what do we know in 2019? *Kardiol Pol.* 2019; 77: 670-673.
- 2 Kara A, Devrim I, Meşe T, et al. The Frequency of Infective endocarditis in *Candida* bloodstream infections: a retrospective study in a Child Hospital. *Braz J Cardiovasc Surg.* 2018; 33: 54-58.
- 3 Habib G, Lancellotti P, Antunes MJ, et al. 2015 ESC Guidelines for the management of infective endocarditis: The Task Force for the Management of Infective Endocarditis of the European Society of Cardiology (ESC). Endorsed by: European Association for Cardio Thoracic Surgery (EACTS), the European Association of Nuclear Medicine (EANM). *Eur Heart J.* 2015; 36: 3075-3128.
- 4 Ağin H, Devrim I, Işgüder R, et al. Risk factors for candidemia in pediatric intensive care unit patients. *Indian J Pediatr.* 2014; 81: 1158-1162.

XXIV Międzynarodowy Kongres

17-19 IX 2020 | Kraków | Polskiego Towarzystwa Kardiologicznego



Żyć dłużej i lepiej dzięki KARDIOLOGII

- Hasło przewodnie XXIV Międzynarodowego Kongresu
Polskiego Towarzystwa Kardiologicznego -

www.kongres2020.ptkardio.pl



kartoteka pacjenta

zarządzanie placówką

druki

przypomnienia SMS

zabiegi

opisy leków

zdalna recepcja

badania dodatkowe

skierowania

e-zwolnienia

recepty

podpowiadanie treści

szablony

kalkulatory

grafik wizyt

internetowa rejestracja

wizyty

e-wuś

e-rejestracja

e-recepty

e-recepty

w programie dla Twojego gabinetu

- Nowa generacja oprogramowania do prowadzenia gabinetu – w danej chwili na ekranie tylko niezbędne elementy
- Zawsze aktualny Indeks Leków Medycyny Praktycznej w całości wbudowany w program
- Recepta w 7 sekund – bezpieczna dla lekarza pomoc w ustaleniu poziomu refundacji
- Integracja z całą wiedzą zawartą w portalu mp.pl
- Drukowanie i wysyłanie materiałów edukacyjnych dla pacjentów
- Integracja z eMPendium kalendarz – przypomnienia i zwrotne potwierdzanie wizyt poprzez e-mail lub sms, zdalna recepcja, rejestracja internetowa, kalendarz wizyt dostępny na komputerze i w telefonie jednocześnie dla Ciebie i Twojej recepcji
- Szablony wizyty, wywiadu, badania, zaleceń
- Autokorekta i podpowiadanie tekstu