Is the Prevalence of Patent Foramen Ovale in Japanese Truly Low?

Kei Takahashi, MD, PhD

Patent foramen ovale (PFO) is a structural heart disease that increases the risk for various diseases, including paradoxical cerebral embolism (Table).\(^1\)\(^-\)\(^4\) Understanding its true prevalence would help in preventing and treating these associated diseases. In this issue of the Journal, Kuramoto et al\(^1\) report on the prevalence of PFO in a Japanese population. Their study materials were 52,717 autopsy cases reported in the Annual Reports of the Japanese Society of Pathology\(^10\) and 103 consecutive formalin-fixed autopsy specimens that had been examined in the authors’ respective facilities. To date, all published studies of the prevalence of PFO have dealt with Western subjects,\(^11\)\(^-\)\(^15\) and the present study aimed to be the first to compile data for Japanese subjects. The results indicate that the prevalence of PFO in Japanese is lower than has been reported for blacks and whites.

Table. Diseases and Conditions Associated With Patent Foramen Ovale

<table>
<thead>
<tr>
<th>Disease/Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cryptogenic stroke(^1)(^,)(^2)</td>
</tr>
<tr>
<td>Systemic arterial embolism(^3)</td>
</tr>
<tr>
<td>Decompression illness (diving)(^4)</td>
</tr>
<tr>
<td>Migraine with aura(^5)</td>
</tr>
<tr>
<td>Obstructive sleep apnea(^6)</td>
</tr>
<tr>
<td>Platypnea-orthodeoxia(^7)</td>
</tr>
<tr>
<td>Transient global amnesia(^8)</td>
</tr>
</tbody>
</table>

So, why is the prevalence reported for Japanese by Kuramoto et al so much lower than the earlier data? Is the difference related to racial differences between Japanese and Westerners?

Kuramoto et al first reviewed the Japanese autopsy reports in a nationwide pathology database. In Japan, pathologists are required to prepare diagnostic summaries for all autopsy cases performed in certified hospitals throughout the country. The summaries must be submitted each year to the Japanese Society of Pathology, which edits and publishes them as annual reports of autopsy statistics, a data source that is unmatched in other countries. My group reported the results of an analysis of autopsies with vasculitic disorders that had been listed in 50 years of the Annual Reports, and discussed the limitations of the data.\(^16\) For each case, the compiled data include the age, sex and clinical diagnosis, together with a summary of the autopsy findings. The autopsy findings must be described within a maximum of 100 written Japanese language characters. For that reason, usually only the main lesion(s) that related directly to the death is described, and secondary findings with a weak relationship to the death tend not to be described. For example, in the case of a death from ischemic stroke because of paradoxical embolism caused by a PFO, it is likely that the presence of the PFO will be described as the main pathological diagnosis, but in the case of a death from a malignant tumor, an incidental finding of PFO will likely be omitted because of the space limitation. Moreover, based on discussion with the clinician, the pathologist’s main goal in the autopsy will be to determine the pathology that led to the patient’s death, and the incidental presence of a PFO is likely to be overlooked. As a result, Kuramoto et al report a very low incidence of PFO (ie, 0.08%, and 0.02% even in patients older than 1 year). Although it is known that the presence of a PFO increases the risk of paradoxical cerebral embolism, only one such case was reported in the more than 50,000 autopsy cases that Kuramoto et al reviewed.

Kuramoto et al then investigated the prevalence of PFO by reviewing 103 consecutive autopsies that had been performed at their institutions. This approach did not carry the risk of overlooking PFO, but was characterized by the smaller number and older age of the autopsy cases compared with large-scale epidemiological studies.\(^11\)\(^-\)\(^15\) The foramen closes naturally after birth, meaning that the frequency of PFO is highest in children and decreases with age. It is also said that, when present, the size of the defect increases with age.\(^11\) The study cohorts in most of the other reports included a broad range of ages, whereas Kuramoto et al’s is limited to elderly subjects, which potentially reduces the detected incidence of PFO. It seems clear that a larger-scale study is needed to accurately assess the prevalence of PFO in the Japanese population.

Finally, the close relationship between atrial septal aneurysm (ASA) and PFO was highlighted. The existence of ASA will be important information for diagnosing PFO and planning a therapeutic strategy.\(^17\)\(^,\)\(^18\)

References