INTRODUCTION

Patients with refractory otitis media caused by antineutrophil cytoplasmic antibody (ANCA)-associated vasculitis (AAV), and particularly reports of myeloperoxidase (MPO)-ANCA-positive middle ear disease. However, making a definitive diagnosis can be difficult, which can adversely affect the outcome of treatment. In this study, we reviewed the diagnostic features of MPO-ANCA-positive middle ear disease to highlight the diagnostic difficulties often encountered. We discuss the difficulties of treatment and draw the attention of otolaryngologists and other clinicians to issues that are important for the timely diagnosis and treatment of this disease.

METHODS

We retrospectively investigated the cases of 7 MPO-ANCA-positive patients (6 women, 1 man; age 57–83 years) who initially complained of otologic symptoms and were referred to Fukushima Medical University between May 2007 and September 2014. Notably, all cases showed the following findings: positive MPO-ANCA (above the reference range of <3.5 EU), negative proteinase 3 (PR3)-ANCA (<10 EU), and middle ear effusion. All patients were tapering steroid therapy and their MPO-ANCA titer was monitored.

RESULTS

In summary, we reported all 7 cases were MPO-ANCA positive and proteinase 3 (PR3)-ANCA negative. Patients were referred to our institute for management of intractable otitis media (2/7), progressive hearing loss (7/7) with facial palsy (1/7), and high MPO-ANCA titer (5/7). All patients underwent tapering steroid therapy and their MPO-ANCA titer was monitored. Some cases of MPO-ANCA-positive otitis media were refractory; 5 of 7 cases showed improvement with steroid therapy, but 2 cases could not be achieved in the other remaining 2 cases. The clinical features of all cases are summarized in Table 3A and 3B.

DISCUSSION

◆ Previous studies reported that most patients (70–80%) with GPA are positive for PR3-ANCA and few (10%) are positive for MPO-ANCA, and it was reported that serum MPO-ANCA was positive in some patients with histopathologically diagnosed GPA. Therefore, MPO-ANCA-positive middle ear disease should be classified as a subtype of GPA despite the lack of histopathological evidence of vasculitis.

◆ The epidemiology of systemic vasculitides differs between Japan, Europe, and North America. In a previous study comparing patient background regarding ANCA-related vasculitides in Japan and the UK, Japanese cases were older (72 vs. 61 years), predominantly subtype MPA, and had fewer GPA. In addition, ANCA patterns revealed that 80% of cases in Japan were MPO-ANCA, while about 30% of cases in the UK were PR3-ANCA. GPA usually progresses in the order of upper airway (ear), lung, and kidney. The condition without renal symptoms is referred to as localized GPA, and Japan has a higher incidence of this compared with other countries.

◆ AAV sometimes develops with initial symptoms affecting the head and neck region. It can be difficult to make a diagnosis from tissue biopsied from the affected region, including the upper airway, because the specimens obtained are often small, making it difficult to make a definitive pathological diagnosis in all cases. In addition, taking biopsy specimens from the middle ear may result in facial palsy and worsening of ear symptoms associated with AAV. Thus, clinicians can find it difficult, or even impossible, to identify the pathologic features of GPA.

◆ GPA can involve the middle ear and/or inner ear, causing conductive, sensorineural, or mixed hearing loss. An autoimmune inner ear disease is thought to cause sensorineural hearing loss in GPA. Ohtani et al. reported that the histopathology of GPA showed slightly atrophic stria vascularis and well-preserved spiral ganglion cells. Tympanic granulation tissue and inflammatory substances could also invade the inner ear through the round window. The histopathology of the temporal bone in GPA associated with complete deafness showed tympanic granulation tissue invasion of the round window niche and round window membrane, and projection into the tympanic duct.

◆ Once initial regional AAV progresses systemically to organs, including the lung and kidney, and to the central nervous system in the absence of immunosuppressive therapy, AAV shows high mortality. It is important, therefore, that initial symptoms in the upper airway are considered with the inclusion of AAV in the differential diagnosis, so that treatment can be started in a timely manner.

CONCLUSIONS

This case series demonstrates the difficulties in diagnosis and treatment of localized AAV. Early diagnosis and treatment can improve the prognosis of patients with AAV, although Japanese diagnostic criteria for ear disease have yet to be established. Additional cases should be prospectively examined to establish the treatment for MPO-ANCA-positive middle ear disease.

REFERENCES

