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Gender differences in the presentation and management of patients with severe aortic stenosis at specialist versus primary/sondary care centres: A sub-analysis of the IMPULSE enhanced registry

Sabine Bleiziffer [a], David Messika-Zeitoun [b], Rick Steeds [c], Clare Appleby [d], Victoria Delgado [e], Helene Eltchaninoff [f], Catherine Gebhard [g], Christian Hengstenberg [h], Wojtek Wojakowski [i], Norbert Frey [j], Jana Kurucova [k], Peter Bramlage [l], Tanja K. Rudolph [m]

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Highlights

- IMPULSE enhanced registry sub-analysis explored gender-specific differences for patients with severe aortic stenosis (AS) at centres (hub and satellites) with and without access to interventions in Europe.
- One result showed a significant difference in volume and type of aortic valve replacement (AVR) between males and females in hub and satellite.
- One-year survival was comparable in both genders, regardless of setting.

Abstract

Background

Management and treatment of severe aortic stenosis (AS) may differ considerably in European countries. To investigate these differences in France, Germany, and the UK the IMPULSE enhanced registry was established. Previous data revealed differences in how patients were managed in specialist (hub) versus primary/secondary care (satellite) centres.

Methods

The IMPULSE enhanced registry sub-analysis aimed to determine if there were gender-specific differences for patients with severe AS at centres with and without access to intervention.

Results

Among the 790 patients, 594 and 196 were recruited at hub and satellite centres, respectively; 44% of patients were female. In both settings, women were older than men (hubs: 78.7 vs. 76.2, $p = 0.007$; satellites: 79.8 vs. 75.1, $p = 0.002$). Symptoms at the presentation were comparable. Males had more often undergone previous cardiac surgery. Females had a smaller left ventricular outflow tract (LVOT), smaller LV cavities, and, more often, a preserved ejection fraction (>50%). There was no gender-based difference in time to intervention. At one year, the cumulative incidence of aortic valve replacement in females was higher than in males in hubs ($p = 0.012$) but not in satellites ($p = 0.600$); surgical AVR was more common in males in hubs only ($p = 0.008$), while transcatheter aortic valve implantation was more common in females in both settings (hubs: $p < 0.001$; satellites: $p = 0.022$). One-year survival was comparable in both genders, regardless of setting.

Conclusions

A better understanding of gender-specific differences in patients with severe AS, according to the diagnostic setting, could improve patient stratification and earlier diagnosis.

Introduction

Aortic stenosis (AS) is a chronic, progressive, and life-threatening disease that, if left untreated, has an average survival of less than three years after the development of symptoms [1,2]. In clinical practice, it is the most common form of treated valvular heart disease and is a major cause of death in people ≥75 years [3]. Aortic valve replacement (AVR) currently remains the only effective treatment for severe AS, with the procedure being performed either surgically (surgical aortic valve replacement; SAVR) for patients considered to be low surgical risk or percutaneously (transcatheter aortic valve implantation; TAVI) for patients at increased surgical risk or older than 75 years [4,5]. Effective treatment substantially improves the patient's quality of life and survival [[6], [7], [8]]. However, data from the IMPULSE registry showed many patients with severe AS are being diagnosed late and have advanced symptoms when referred and that almost one-quarter of symptomatic AS patients do not undergo treatment despite meeting guideline recommendations for AVR [9].

It is important to understand what factors impact patients receiving a timely diagnosis and appropriate intervention for AS. It is perhaps less surprising that there are geographical differences in patients being diagnosed and treated for AS, especially between developed and underdeveloped nations [10]. Still, these differences also exist between developed European countries [11]. Findings from the IMPULSE enhanced registry showed differences in managing and treating patients with severe AS in heart valve centres (hubs) compared with primary and secondary (satellite) care centres [12].

It is well known that gender can also impact the diagnosis and treatment of various diseases, including cardiac conditions [13,14]. Studies have shown that there are differences in the clinical presentation of AS between men and women, with women typically having more severe AS symptoms and being older than their male counterparts at the time of diagnosis [15,16]. In addition to different patient profiles between male and female patients, the treatment approaches varied by gender, with women being more commonly assigned to TAVI than SAVR [17]. Importantly, however, a retrospective study in England has shown that women had lower odds of receiving AVR than men [18].

The IMPULSE enhanced registry was developed better to understand the current management of patients with AS and to determine the adequacy of treatment with and without onsite access to surgery and percutaneous AVR [19]. We used this data to perform a sub-analysis that looked at the impact of gender for patients with AS at centres with (hubs) and without (satellites) access to intervention.

Section snippets

Study design and participating sites

The design of the IMPULSE enhanced registry has been described previously [19]. Briefly, both registries were international, multicentre, prospective, observational registries of patients with severe AS. European sites were selected based on their ability to provide a full range of interventions for AS, including surgical and percutaneous procedures. The tertiary care centres (referred to as hubs) were Cologne and Kiel (Germany), Paris (France) and Birmingham (UK). Each hub had at least two …

Results

The IMPULSE enhanced registry enrolled 790 patients – 594 patients at hubs (including 224 in Germany, 170 in France, and 200 in the UK) and 196 patients at satellite centres (including 105 in Germany, 31 in France, and 60 in the UK). Overall, 294/790 (37.2 %) and 496/790 (62.8 %) of patients were seen on an in- and outpatient basis, respectively. …

Discussion

The diagnosis of severe AS can be challenging, and despite the efforts of current healthcare systems, patients in high-income countries, particularly those in deprived socioeconomic groups, can remain undiagnosed [20]. Guidelines have been developed to enable a consistent approach to the timely diagnosis and management of AS [4,21]. However, despite the availability of guidelines, more needs to be done to ensure their adherence/implementation, especially for those patients with symptomatic AS …

Conclusions

A better understanding of the gender-specific differences in patients with severe AS, according to the setting of diagnosis (hub vs. satellite setting), could lead to improved patient risk stratification, earlier diagnosis (particularly for female patients), and the development of gender-specific intervention plans. …

Study registration number

NCT03112629 ↗ …

CRediT authorship contribution statement

Sabine Bleiziffer: Investigation, Data curation. **David Messika-Zeitoun:** Visualization, Supervision, Data curation, Conceptualization. **Rick Steeds:** Visualization, Investigation, Data curation, Conceptualization. **Clare Appleby:** Visualization, Supervision, Investigation, Data curation. **Victoria Delgado:** Validation, Supervision, Investigation, Data curation, Conceptualization. **Helene Eltchaninoff:** Visualization, Supervision, Investigation, Data curation. **Catherine Gebhard:** Supervision, …

Statement of ethics

The study was performed in accordance with the Declaration of Helsinki and was approved by the appropriate ethics committees at each participating study site. Patient informed consent was obtained before enrolment. …

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Declaration of competing interest

DM-Z, RS, and NF received honoraria for advisory board meetings from Edwards Lifesciences. JK is an employee of the funder. PB received research funding from Edwards Lifesciences. TKR received speaker's honoraria from Boston Scientific, Edwards Lifesciences, JenaValve, and Medtronic and is a medical advisor for JenaValve and Medtronic. The reported conflicts of interest did not influence the analysis or interpretation of the study results. …

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