

včasnou detekci PDAC bez potřeby pokročilých a invazivních metod stále chybí. Diagnostika tak zůstává závislá na radiologických metodách a endoskopické ultrasonografii. V naší přehledové práci shrnujeme nejnovější epidemiologická data, rizikové faktory, klinickou manifestaci a současné diagnostické trendy se zaměřením na sérové biomarkery a zobrazovací modalita. Kromě toho popisujeme aktuální terapeutické postupy.

**Klíčová slova:** pankreas, karcinom pankreatu, duktální adenokarcinom pankreatu, diagnostika karcinomu pankreatu, management karcinomu pankreatu, léčba karcinomu pankreatu.

## Introduction

Pancreatic cancer commonly refers to pancreatic ductal adenocarcinoma (PDAC), which represents the majority of malignant pancreatic neoplasms and has one of the worst prognosis among solid malignancies. Based on the GLOBOCAN 2020 estimates, it is the seventh leading cause of cancer-related death in both men and women worldwide with 496,000 new cases and mortality rate almost identical when accounting for 466,000 deaths (1). Incidence and mortality rates have been steadily rising in many countries, likely reflecting the increasing prevalence of obesity, diabetes, and alcohol consumption, although improvements in diagnostic and cancer registration practices may also be in play in some countries (1, 2). Rates are 4-fold to 5-fold higher in countries with high social-demographic indices, with the highest incidence rates in Europe, Northern America, and Australia/New Zealand (1). The time trend of malignant pancreatic neoplasms in the Czech Republic is demonstrated in Fig. 1 (3); in 2018 it was the seventh most frequently diagnosed malignancy with 2,332 new cases and the third most common cause of cancer mortality with 2,159 deaths, which ranked third in Europe (4). In the United States PDAC is currently the third leading cause of cancer death after lung cancer and colorectal cancer, and it is predicted to be the second deadliest cancer by 2030 (5, 6).

Because of the absence of specific symptoms, the majority of PDAC are diagnosed late with poor prognosis, as most patients have advanced and incurable disease at detection (7). The 5-year survival rate for metastatic disease is 3.0%, rising to 14.4% for regional and 41.6% for localized disease (8). The dismal prognosis is also due to the aggressive nature of the tumor and its resistance to chemotherapy and radiotherapy (9–11). Compared to other malignancies, there has been little improvement in the survival rate of patients with PDAC in recent decades, and radical surgical resection of localized disease remains the only curative approach (12–14).

Screening with detection of asymptomatic stages of PDAC and its precursors has been proposed to improve results. At present, however, guidelines recommend against unselected screening for PDAC in asymptomatic adults, concluding that the potential benefits do not outweigh the potential harms, and such approach is reserved for high-risk individuals (15, 16). Given the lack of highly sensitive and specific diagnostic biomarkers, the diagnosis is currently dependent on advanced imaging modalities; sometimes it requires preoperative tissue acquisition.

The purpose of this review is to summarize the current diagnostic approach to PDAC in the general population, reviewing clinical presentation, relevant conventional and investigational biomarkers, and

**Fig. 1.** Incidence and mortality trends of malignant pancreatic neoplasms in the Czech Republic (3)

