Advances in Clinical Medicine 临床医学进展, 2023, 13(8), 12583-12589
Published Online August 2023 in Hans. https://www.hanspub.org/journal/acm
https://doi.org/10.12677/acm.2023.1381764

Hans汉斯

颈部坏死性筋膜炎及下行性坏死性纵隔炎伴大出血1例并文献复习

邴　馨[1]，高晓晨[2]，曹　雪[1]，李程知临[2]，侯晓智[1,2]，刘成程[3]，夏　明[1*]

[1]山东大学山东省立医院耳鼻咽喉科，山东　济南
[2]山东第一医科大学附属山东省立医院耳鼻咽喉科，山东　济南
[3]山东第一医科大学附属山东省医院中心实验室，山东　济南

收稿日期：2023年7月13日；录用日期：2023年8月7日；发布日期：2023年8月14日

摘　要

目的：分析探讨颈部坏死性筋膜炎(CNF)及下行性坏死性纵隔炎(DNM)的急危重病例的早期识别方法、诊治处理策略及介入血管造影栓塞在头颈部感染所致大出血中的应用。方法：回顾性分析1例CNF及DNM伴2次大出血患者的临床成功抢救资料，结合文献总结此类病例的临床表现、影像学检查特点，分析头颈部感染伴出血时止血方法的选取及预后。结果：通过尽早颈深部上纵隔手术探查清创引流联合介入血管造影栓塞止血，以及术后全身管理和积极的静脉抗生素抗感染治疗后，患者最终康复出院，术后3月随访无并发症。结论：CNF及DNM是一种严重的感染性疾病，若不尽快手术干预，死亡率极高。本例报告中，通过头颈外科尽早积极开放手术清创引流换药、介入科及时血管造影明确出血血管并栓塞止血，以及重症监护室对症支持治疗的多学科联合，为CNF及DNM伴大出血病例的诊治提供了一种有效方法和重要参考依据。

关键词

颈部坏死性筋膜炎，下行性坏死性纵隔炎，血管造影，栓塞

Cervical Necrotizing Fasciitis and Descending Necrotizing Mediastinitis with Massive Hemorrhage: A Case Report and 1 Review of the Literature

Xin Bing[1], Xiaochen Gao[2], Xue Cao[1], Chengzhilin Li[2], Xiaozhi Hou[1,2], Chengcheng Liu[3], Ming Xia[1*]

[1]Department of Otolaryngology, Shandong Provincial Hospital, Shandong University, Jinan Shandong

[*]通讯作者。

文章引用: 邴馨, 高晓晨, 曹雪, 李程知临, 侯晓智, 刘成程, 夏明. 颈部坏死性筋膜炎及下行性坏死性纵隔炎伴大出血 1 例并文献复习[J]. 临床医学进展, 2023, 13(8): 12583-12589. DOI: 10.12677/acm.2023.1381764

[2]Department of Otolaryngology, Shandong Provincial Hospital Affiliated to Shandong First Medical University, Jinan Shandong
[3]Department of Central Laboratory, Shandong Provincial Hospital Affiliated to Shandong First Medical University, Jinan Shandong

Received: Jul. 13th, 2023; accepted: Aug. 7th, 2023; published: Aug. 14th, 2023

Abstract

Objective: To analyze and explore the early identification methods, diagnosis and treatment strategies, and the application of interventional angiographic embolization in the treatment of acute critical cases of neck necrotizing fasciitis (CNF) accompanied by descending necrotizing mediastinal inflammation (DNM) infection that endangers blood vessels. Method: A retrospective analysis was conducted on the clinical data of a patient with CNF accompanied by DNM accompanied by massive bleeding. Combined with relevant literature, the clinical manifestations and imaging features of the disease were summarized, and the selection of hemostatic methods and prognosis for head and neck infections accompanied by bleeding were analyzed. Results: Through surgical exploration, debridement, drainage, interventional angiography and embolization, as well as postoperative electrolyte management and active intravenous antibiotic anti infection treatment, the patient finally recovered and was discharged. There were no complications during the 3-month follow-up after the surgery. Conclusion: CNF and DNM are serious infectious diseases, and the mortality rate will be extremely high if there is no surgical intervention as soon as possible. In this case report, an effective method and important reference basis for the diagnosis and treatment of CNF and DNM patients with massive bleeding were provided through the early and active opening of surgical debridement, drainage and dressing changes in head and neck surgery, timely identification of bleeding vessels and embolization for hemostasis in interventional departments, and the multidisciplinary combination of symptomatic support and treatment in the intensive care unit.

Keywords

Cervical Necrotizing Fasciitis, Descending Necrotizing Mediastinal Inflammation, Angiography, Embolism

1. 引言

颈深部感染(DNI)发生在颈部间隙和筋膜平面，多导致脓肿形成[1]，是病死率极高的急危重症[2]。多数 DNI 的起源是由于牙源性感染[3]，可发生在任何年龄组的人群，感染可能会扩散到附近结构，如软组织和颈浅部和颈深部间隙[4]，可发展为颈部坏死性筋膜炎(CNF)，CNF 以颈部筋膜和软组织坏死为特征的严重的多微生物、细菌感染，病死率和致残率很高，尤其是在患有糖尿病合并症和免疫抑制的患者中，感染可沿颈部筋膜和间隙传播，到达上纵隔筋膜甚至心包，引起更为严重的下行性坏死性纵隔炎(DNM) [5]。

DNM 是由颈深部组织扩散到颈部筋膜层后继发的纵隔感染。患者常有颈部疼痛，伴发热、咽痛及吞咽困难等症状[6]。在治疗方面，通常是应用广谱抗生素和积极的手术治疗[7]。在颈深部感染和上纵隔受

累的情况下，可通过积极手术清创。清创尽可能多的颈部间隙是至关重要的，因为感染会通过相邻多个间隙传播[8]。

颈深部感染是一种迅速蔓延、危及生命的细菌性疾病，在感染到复杂的解剖结构部位时有潜在的致命危险性，死亡率在 8.7%至 74%之间[9]。即使在现代医学下也会面临并发症的发生。前部内脏筋膜和后部椎前筋膜之间的深颈部间隙被翼状筋膜进一步划分为前方的咽后间隙和后方的危险间隙。真正的咽后间隙从颅底延伸到上纵隔，而危险间隙则进一步向下延伸到膈肌[10] [11]。多数文献支持脓肿形成后及时外科引流的必要性，这除了具有积极的治疗意义外，还提供了微生物样本，以更好地进行抗生素对细菌感染或物致病微生物的治疗[12] [13] [14]。

因发烧、头痛和颈部肿胀而到急诊科就诊的患者，可能会出现罕见但又极其严重危及生命的 DNM。临床快速诊断、手术引流、抗生素治疗，可保护患者免受败血症和多器官衰竭等并发症的发生，从而有助于降低死亡率[15]。

本文对 CNF 并发 DNM 术后大出血一例危重病例，通过耳鼻喉科和介入放射学、重症学科、药物临床多学科治疗，进行了探讨。

2. 资料与方法

2.1. 病例资料

患者，男性，53 岁，因“颈部肿胀 9 天”入院。患者 9 天前因无明显诱因出现颈部疼痛，伴发热、咽痛及吞咽困难。患者自行口服“头孢”抗炎治疗未见明显好转遂就诊于我院急诊，我科以“颈部间隙感染”收治入院。既往否认高血压、糖尿病、冠心病等系统性疾病史。否认外伤及手术史。查体：患者神志清，查体合作，颈部肿胀，皮温升高，伴压痛，触之波动感，双侧颈部未触及明显肿大淋巴结，咽部水肿且弥漫性充血(图 1)。诊断：1) 颈深部上纵隔感染；2) 支气管炎；3) 肺气肿。入院 T：37.6℃；P：100 次/分；R：25 次/分；BP：126/87 mmHg。

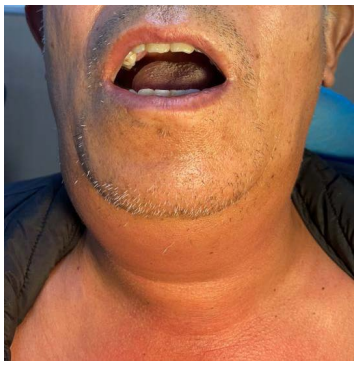

Figure 1. Physical examination showed swelling in the neck, elevated skin temperature, accompanied by tenderness, and a sensation of wave motion
图 1. 查体见颈部肿胀，皮温升高，伴压痛，触之波动感

2.2. 方法

2.2.1. 辅助检查

入院后颈部 CT 示：1) 颈部多发间隙高密度并积气，首先考虑感染性疾病；双侧颈部多发肿大淋巴结；2) 支气管炎、双肺局限性肺气肿；双肺多发慢性炎症、纤维灶；右肺上叶微小结节；心包少量积液；冠状动脉硬化表现；肝内低密度灶，考虑囊肿可能(图 2)。

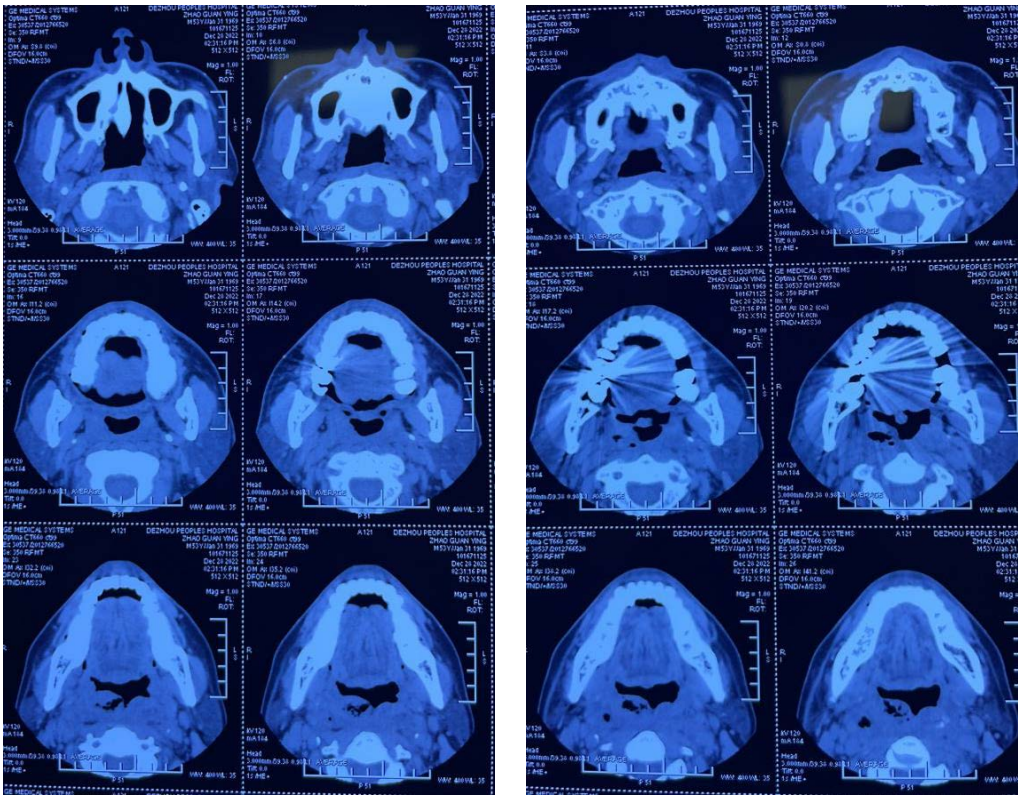

Figure 2. Neck CT shows multiple gaps in the neck with high density and gas accumulation
图 2. 颈部 CT 示颈部多发间隙高密度并积气

2.2.2. 手术

入院后急行气管切开术 + 颈深颌面部及上纵隔探查、脓肿切开引流术。术中暴露双侧咽旁间隙、咽后间隙及危险间隙，向上达颅底，向下达上纵膈，清除脓液、坏死筋膜组织及失活组织，将各个脓腔打通成为整体引流通畅的间隙，反复用大量生理盐水及碘伏溶液冲洗脓腔，右侧颈部放置引流管 2 根，上达颅底，下达上纵膈，左侧颈部放置引流管 1 根达左侧舌骨上方、颌下腺深面。术后给予邦达 4.5 g bid 抗感染，每日给予换药(图 3)。

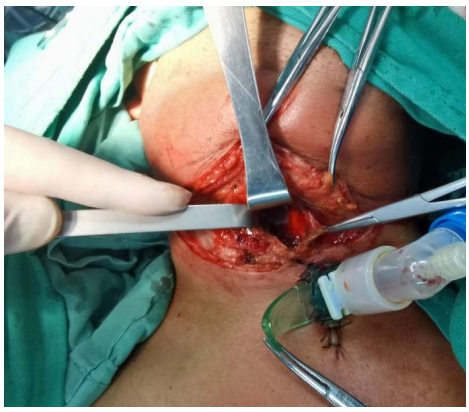

Figure 3. During the operation, Tracheotomy was performed to explore the deep neck, maxillofacial region and upper mediastinum
图 3. 术中行气管切开术，探查颈深颌面部及上纵隔

2.2.3. 术后 2 次大出血及抢救处理

术后第 1 天，患者转入重症监护治疗，出现鼻腔大量出血，予以膨胀海绵填塞双鼻腔仍出血，躯干皮肤可见花斑，肢体末梢存在紫绀，P：125 次/分，BP：96/58 mmHg。纤支镜检查见起到内遍布血液，吸出大量血凝块。联系血管介入科行右侧、左侧颈外动脉造影，见右侧颈外动脉发出的上颌动脉远端异常浓染，遂以微导管超选该动脉后以微弹簧圈栓塞，之后回撤微导管，给予颈外动脉分层性经验性栓塞，造影复查可见右侧颈外动脉血流明显减缓。考虑患者可能存在需氧菌与厌氧菌混合感染、革兰阴性杆菌与革兰阳性球菌混合感染，调整抗生素使用亚胺培南司他丁联合替加环素抗感染。术后第三天血培养示革兰阳性球菌，考虑患者存在血流感染，停用替加环素，加用万古霉素覆盖血流革兰阳性球菌。术后第五天，血培养回示星座链球菌，复查感染指标白细胞及降钙素原均下降，抗感染有效。床旁超声示双侧胸腔积液，予胸腔闭式引流，引流清亮淡黄色透明积液。术后第 8 天，患者转回普通病房，颈部引流液培养示阴沟肠杆菌 + 洋葱伯克霍德菌，据药敏结果调整抗生素为替加环素联合头孢他啶。术后第 12 天血培养阴性。每日予以内镜下换药，清理术区坏死伪膜组织，搔刮出创面，更换引流条(图 4)。术后第 20 天复查颈部超声及电子喉镜未见明显积液。

术后第 22 天，患者再次出现右侧颈部出血伴口鼻出血，行颈外动脉造影，见右侧颈外动脉发出的舌动脉及甲状腺上动脉远端异常浓染区，以微导管超选该动脉后以微弹簧圈栓塞(图 5)。术后第 23 天患者出院，当地医院继续抗感染、抗炎、营养、对症、换药治疗。术后出院 3 个月随访，患者已完全康复，未出现明显并发症。

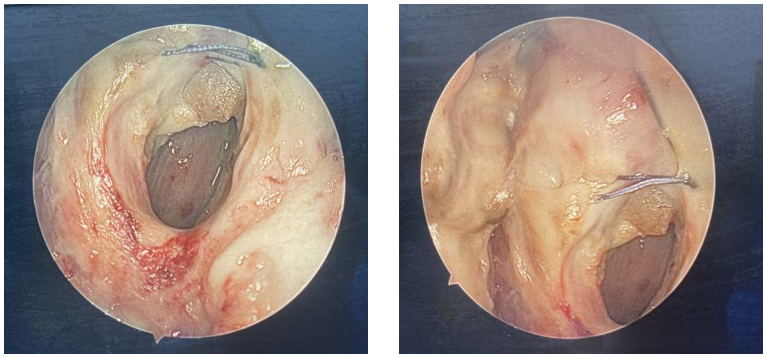

Figure 4. After surgery, endoscopic dressing changes were performed to clean up necrotic pseudomembranous tissue in the surgical area
图 4. 术后予以内镜下换药，清理术区坏死伪膜组织

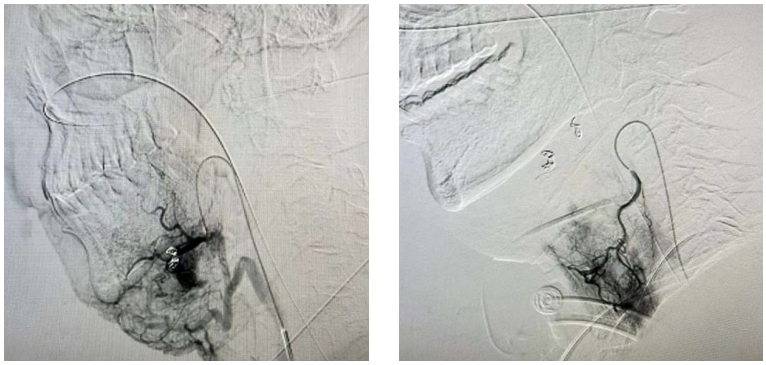

Figure 5. Interventional embolization of hemorrhagic blood vessels in the superior thyroid artery
图 5. 介入栓塞出血血管甲状腺上动脉

3. 讨论

CNF、DNM 临床的早期识别及诊断十分重要。DNM 常见于由牙源性、口咽或颈部脓肿继发感染发展而来[16]；咽部、扁桃体或牙齿的感染会影响咽后气管旁、食管旁、椎前、后纵隔和胸膜间隙。从软组织通过深筋膜和浅筋膜平面扩散到纵隔，并在重力和负压作用下扩散到胸腔。13%~30%的患者没有任何合并症或易感因素[17]。该病例患者发病前一般状况良好，无基础疾病及慢性病史，无创伤及手术史，未见合并症及易感因素。因此，临床上在急诊对于因颈部肿胀伴随发热、呼吸困难等症状的患者，应考虑到可能会出现严重危及生命的 DNM。诊断延迟，可能导致疾病的快速发展和致命的后果[18]。

DNM 是一种严重危及生命的疾病，引起败血症或其他并发症高死亡率疾病。DNM 患者必须进入重症监护室重症监护室[19]，术后应密切监测生命体征及电解质情况，应用有效的足量抗生素控制感染，密切观察切口变化，加强引流及换药[20]。该病例中入院即给予经验抗生素抗感染治疗，术后根据血培养结果、引流液细菌培养结果及药敏情况，及时更换抗生素。术后每日予以内镜下换药，清理术区坏死伪膜组织，加强负压引流，必要时及时更换引流条。

头颈部解剖结构复杂，重要腔道和组织器官密集，颈部血管主要可分为颈部动脉与颈部静脉，常见如颈总动脉、锁骨下动脉、颈外静脉等，因此一旦危及颈动脉出血异常凶猛，救治困难。头颈部出血一般多表现为鼻出血，因此对于颈部感染患者的鼻出血，应考虑到感染进展破坏了头颈部大血管[21]。该例患者两次出血表现为鼻、口腔出血，早期识别感染进展对于后续治疗赢得了时间。发生大出血后应立即给气管套管气囊充气，保持呼吸道畅通，防止误吸，建立静脉通道补液，必要时输血。该病例中，我们考虑患者大出血主要由于感染未得到有效的控制而进展，局部组织坏死，血管被侵蚀破坏。目前治疗感染所致大出血常用方法包括：应用止血药物保守治疗、前鼻孔填塞法、电凝烧灼法、开放手术结扎血管等[22]。该例中出血位置结构破坏难以填塞，感染后血管失去正常结构无法进行有效结扎，贸然结扎可致结扎处脆性断裂，并且感染伤口愈合缓慢。

我们实施了介入栓塞，介入栓塞对于头颈部出血是一种安全且有效的方法[23]。栓塞前首先局麻下以 Seldinger 技术穿刺股动脉，送入造影导管，序列选插右侧、左侧颈外动脉造影。栓塞常可选用聚乙烯醇、医用胶、弹簧圈等。感染后血管壁薄弱，操作应轻柔减少损伤。栓塞时应将导管超选择插至接近出血点位置，以提高效果减少并发症的发生。头颈部多为双侧血供，因此应行双侧靶血管栓塞。

4. 结论

综上所述，急诊中早期识别 CNF & DNM 病例、急症清创引流手术对于患者后续抗感染治疗十分重要。介入血管造影及栓塞治疗，是颈部感染伴大出血的患者快速诊断，明确出血原因，并确切止血的有效方法。

参考文献

[1] Pesis, M., Bar-Droma, E., Ilgiyaev, A., *et al*. (2019) Deep Neck Infections Are Life Threatening Infections of Dental Origin: A Presentation and Management of Selected Cases. *Israel Medical Association Journal*, **21**, 806-811.

[2] Colizza, A., D'Erme, G., Ciofalo, A., *et al*. (2022) Surgical Excision of Unusual Sacked Neck and Mediastinum Abscess of Odontogenic Origin. *Antibiotics*, **11**, Article 1757. https://doi.org/10.3390/antibiotics11121757

[3] Medeiros Jr, R., Catunda Ide, S., Queiroz, I.V., de Morais, H.H., Leao, J.C. and Gueiros, L.A. (2012) Cervicofacial Necrotizing Fasciitis following Periodontal Abscess. *General Dentistry*, **60**, 316-321.

[4] Ma, C., Zhou, L., Zhao, J., *et al*. (2019) Multidisciplinary Treatment of Deep Neck Infection Associated with Descending Necrotizing Mediastinitis: A Single-Centre Experience. *Journal of International Medical Research*, **47**, 6027-6040. https://doi.org/10.1177/0300060519879308

[5] Lenzi, R., Fratini, G., Dinelli, E., *et al*. (2021) A Case of Cervical Fasciitis Complicated by Mediastinitis and

Pre-Peritoneal Abscess: The Role of Video-Assisted Thoracoscopic Surgery. *Indian Journal of Thoracic and Cardiovascular Surgery*, **37**, 195-199. https://doi.org/10.1007/s12055-020-01036-6

[6] Hu, C.Y., Lien, K.H., Chen, S.L. and Chan, K.C. (2022) Risk Factors of Descending Necrotizing Mediastinitis in Deep Neck Abscesses. *Medicina*, **58**, Article 1758. https://doi.org/10.3390/medicina58121758

[7] Adovič a, A., Veidere, L., Ronis, M. and Sumeraga, G. (2017) Deep Neck Infections: Review of 263 Cases. *Polish Journal of Otolaryngology*, **71**, 37-42. https://doi.org/10.5604/01.3001.0010.5315

[8] Acharya, P.P., Cohn, J.E., Shokri, T., Bundrick, P. and Ducic, Y. (2022) Surgical Management of Necrotizing Fasciitis of the Head and Neck. *The Journal of Craniofacial Surgery*, **33**, e858-e861. https://doi.org/10.1097/SCS.0000000000008787

[9] Dale, R.A., Hoffman, D.S., Crichton, R.O. and Johnson, S.B. (1999) Necrotizing Fasciitis of the Head and Neck: Review of the Literature and Report of a Case. *Special Care in Dentistry*, **19**, 267-274. https://doi.org/10.1111/j.1754-4505.1999.tb01396.x

[10] Heikkinen, J., Nurminen, J., Velhonoja, J., *et al*. (2022) Clinical and Prognostic Significance of Emergency MRI Findings in Neck Infections. *European Radiology*, **32**, 1078-1086. https://doi.org/10.1007/s00330-021-08200-5

[11] Debnam, J.M. and Guha-Thakurta, N. (2012) Retropharyngeal and Prevertebral Spaces: Anatomic Imaging and Diagnosis. *Otolaryngologic Clinics of North America*, **45**, 1293-1310. https://doi.org/10.1016/j.otc.2012.08.004

[12] Gehrke, T., Scherzad, A., Hagen, R. and Hackenberg, S. (2022) Deep Neck Infections with and without Mediastinal Involvement: Treatment and Outcome in 218 Patients. *European Archives of Oto-Rhino-Laryngology*, **279**, 1585-1592. https://doi.org/10.1007/s00405-021-06945-9

[13] Kocher, G.J., Hoksch, B., Caversaccio, M., Wiegand, J. and Schmid, R.A. (2012) Diffuse Descending Necrotizing Mediastinitis: Surgical Therapy and Outcome in a Single-Centre Series. *European Journal of Cardio-Thoracic Surgery*, **42**, e66-e72. https://doi.org/10.1093/ejcts/ezs385

[14] Yuan, H. and Gao, R. (2018) Infrahyoid Involvement May Be a High-Risk Factor in the Management of Non-Odontogenic Deep Neck Infection: Retrospective Study. *American Journal of Otolaryngology*, **39**, 373-377. https://doi.org/10.1016/j.amjoto.2018.03.009

[15] Guo, J., Lin, L., Zhou, H., *et al*. (2023) Descending Necrotizing Mediastinitis Caused by *Streptococcus constellatus*: A Case Report and Review of the Literature. *Medicine*, **102**, e33458. https://doi.org/10.1097/MD.0000000000033458

[16] Chen, S.L., Chin, S.C., Wang, Y.C. and Ho, C.Y. (2022) Factors Affecting Patients with Concurrent Deep Neck Infection and Cervical Necrotizing Fasciitis. *Diagnostics*, **12**, Article 443. https://doi.org/10.3390/diagnostics12020443

[17] Ishinaga, H., Otsu, K., Sakaida, H., *et al*. (2013) Descending Necrotizing Mediastinitis from Deep Neck Infection. *European Archives of Oto-Rhino-Laryngology*, **270**, 1463-1466. https://doi.org/10.1007/s00405-012-2182-5

[18] Congedo, M.T., Nachira, D., Pennisi, M.A., *et al*. (2022) Risk Factors Associated with Post-Operative Complications in Multidisciplinary Treatment of Descending Necrotizing Mediastinitis. *Journal of Clinical Medicine*, **11**, Article 6364. https://doi.org/10.3390/jcm11216364

[19] Kimura, A., Miyamoto, S. and Yamashita, T. (2020) Clinical Predictors of Descending Necrotizing Mediastinitis after Deep Neck Infections. *The Laryngoscope*, **130**, E567-E572. https://doi.org/10.1002/lary.28406

[20] Sartelli, M., Labricciosa, F.M., Coccolini, F., *et al*. (2022) It Is Time to Define an Organizational Model for the Prevention and Management of Infections along the Surgical Pathway: A Worldwide Cross-Sectional Survey. *World Journal of Emergency Surgery*, **17**, Article No. 17.

[21] Truesdale, C.M., Baugh, R.F., Brenner, M.J., *et al*. (2021) Prioritizing Diversity in Otolaryngology—Head and Neck Surgery: Starting a Conversation. *Otolaryngology—Head and Neck Surgery*, **164**, 229-233. https://doi.org/10.1177/0194599820960722

[22] Joshua, J., Scholten, E., Schaerer, D., *et al*. (2018) Otolaryngology in Critical Care. *Annals of the American Thoracic Society*, **15**, 643-654. https://doi.org/10.1513/AnnalsATS.201708-695FR

[23] Wong, D.J.Y., Donaldson, C., Lai, L.T., *et al*. (2018) Safety and Effectiveness of Endovascular Embolization or Stent-Graft Reconstruction for Treatment of Acute Carotid Blowout Syndrome in Patients with Head and Neck Cancer: Case Series and Systematic Review of Observational Studies. *Head & Neck*, **40**, 846-854. https://doi.org/10.1002/hed.25018