Table 1: Clinical and laboratory findings of the patients with thromboembolic events after Oxford–AstraZeneca and Johnson & Johnson COVID-19 vaccination. 0

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Authors** | **Type of Vaccine** | **Total No./****Sex/Age** | **Preexisting conditions / Medications** | **Time from vaccination (days)** | **Clinical presentations** | **Imaging Findings** | **Lab Findings** | **Outcome** |
| 1 | Aladdin, Y. et al.[[27](#_ENREF_27)] | AstraZeneca(ChAdOx1 nCoV-19) | 36 y/o F | **-** | 14 days | Sudden onset of focal left-sided convulsions Weakness in the left arm, Fever | Superior sagittal thrombosis Extensive Dural venous sinus thrombosis of the superior sagittal, andproximal left transverse sinus thrombosis | Platelet count: 94cells×109/litPF4 IgG Assay:Positive d-Dimer : Positive  | Fatal |
| 2 | Bano F, et al.[[28](#_ENREF_28)] | AstraZeneca(ChAdOx1 nCoV-19) | 53 y/o F55 y/o M | **-**- | 14 days10 days | Headaches, Facial weakness,HemiparesisHeadaches, Right arm weakness | Superior sagittal sinus, Right sigmoid, Right transverse sinus thrombosisCortical veins, Superior sagittal sinus,left transverse, left sigmoid sinus andleft internal jugular vein thrombosis | Platelet count: 24cells×109/lit, PF4 IgG Assay: Positive, d-Dimer : Positive Platelet count: 21cells×109/lit, PF4 IgG Assay: Positive, d-Dimer : Positive  | FatalFatal |
| 3 | Bayas A, et al.[[17](#_ENREF_17)] | AstraZeneca(ChAdOx1 nCoV-19) | 55 y/o F | - | 10 days | Conjunctivalcongestion, Retro-orbital pain, and Diplopia | Bilateral superior ophthalmic vein thrombosisIschemic stroke in the left parietal lobe, MCA territory | Platelet count: 30cells×109/litPF4 IgG Assay:Negative | Alive |
| 4 | Bjørnstad-Tuveng TH, et al.[[18](#_ENREF_18)] | AstraZeneca(ChAdOx1 nCoV-19) | 30 y/o F | Mild preeclampsia in a previous pregnancy | 7 days | Headache | CVST inTransverse sinus, Frontal lobe, and Pulmonary artery.With ICH and SAH | Platelet count: 37cells×109/litPF4 IgG Assay:Positive d-Dimer : Positive  | Fatal |
| 5 | Blauenfeldt RA, et al.[[14](#_ENREF_14)]  | AstraZeneca(ChAdOx1 nCoV-19) | 60 y/o F | Hashimoto's thyroiditis and Hypertension | 9 days | left-sided weakness, Eye deviation to the right | Right MCA infarct | Platelet count: 5cells×109/litPF4 IgG Assay:Positive d-Dimer : Positive | Fatal |
| 6 | Castelli GP, et al.[[19](#_ENREF_19)] | AstraZeneca(ChAdOx1 nCoV-19) | 50 y/o M | - | 11 days | HeadacheDeviation of the right buccal rim loss of strength in the right lower limb Slight visual impairment | CVSTIn left transverse and sigmoid sinusesAnd ICH |  Platelet count: 20cells×109/lit d-Dimer : Positive | Fatal |
| 7 | D'Agostino V, et al.[[20](#_ENREF_20)] | AstraZeneca(ChAdOx1 nCoV-19) | 54 y/o F | Meniere’s disease | 12 days | left side weakness | CVSTMultiple subacute intra-axial hemorrhages in atypical locationsSAHAcute basilar thrombosisSuperior sagittal sinus thrombosisNon-occlusive thrombosis of the vein of GalenMyocardial infarctionThrombus within the aortic arch and left portal branch andRight suprahepatic vein andBilaterally, Adrenal hemorrhage | Thrombocytopeniad-Dimer : Positive | Fatal |
| 8 | Dutta,A, et al.[[30](#_ENREF_30)] | AstraZeneca(ChAdOx1 nCoV-19) | 51 y/o M | - | 6 days | HeadacheVomitingDouble vision andHorizontal gazePapilledema, | Superior sagittal sinus and Transversesinus with presence of extensive venous collaterals thrombosis | Platelet count: NLPF4 IgG Assay:Negative | Alive |
| 9 | Franchini M et al.[[21](#_ENREF_21)] | AstraZeneca(ChAdOx1 nCoV-19) | 50 y/o M | - | 7 days | Headache | CVST in left transverse and Sigmoid sinusesIntra-parenchymal hemorrhage in the left cerebral hemisphere | Platelet count: 15cells×109/litPF4 IgG Assay:Positive d-Dimer : Positive  | Fatal |
| 10 | Gessler Fet al.[[31](#_ENREF_31)] | AstraZeneca(ChAdOx1 nCoV-19)Johnson and Johnson(Ad26.COV2.S) | 47 y/o F50 y/o F44 y/o F | --- | 12 days7 days10 days | Headache | Sinus thrombosis and ICHHerniation | Platelet count: 9cells×109/lit, d-Dimer : Positive, PF4 IgG Assay:-Platelet count: 24cells×109/lit, d-Dimer : Positive, PF4 IgG Assay:-Platelet count: 48cells×109/lit, d-Dimer : Positive, PF4 IgG Assay:- | FatalFatalFatal |
| 11 | Guan C.-Y, et al.[[32](#_ENREF_32)] | AstraZeneca(ChAdOx1 nCoV-19) | 52 y/o M | - | 10 days | HeadacheNeck pain | CVST at the left transverse sinus and sigmoid sinuses andthrombosis of the left internal jugular vein | Platelet count: 99cells×109/litPF4 IgG Assay:Positive d-Dimer : Positive | Alive |
| 12 | Greinacher A et al.[[87](#_ENREF_87)] | AstraZeneca(ChAdOx1 nCoV-19) | 9 Patients | 1 case with Chronic neurological disorder1 case with type 1 von Willebrand disease and Positive anticardiolipin antibodies | 9.3 (Range:5-16)days | - | -9 CVST -Pulmonary embolism-Splanchnic vein thrombosis-Aortoiliac thrombosis-Intra ventricular, iliofemoral vein,-Multiple organ thromboses | Platelet count: 27.3 cells×109/lit(Range 8-75)PF4 IgG Assay:7 Positive 2 Unknown d-Dimer : Positive in all cases | 5 Fatal1 Unknown3 Alive |
| 13 | Mehta PR et al.[[5](#_ENREF_5)] | AstraZeneca(ChAdOx1 nCoV-19) | 2 MMean Age:28.5 y/o (Range: 25-32) | 1 case with Primary sclerosing cholangitis | 7.5 days(6-9) | Headache | CVST in Superior sagittal sinus, Cortical veins, and Superior sagittal sinusWith ICH and SAH | Platelet count: 24.5cells×109/lit(Range 19-30)PF4 IgG Assay:1 Positive 1 unknown d-Dimer : 1 Positive 1 unknown | 2 Fatal |
| 14 | Schultz NH et al.[[15](#_ENREF_15)]  | AstraZeneca(ChAdOx1 nCoV-19) | 4 F Mean age: 43Range:37-54) | HypertensionOral contraceptive pill(OCP) 1, Contraceptive vaginal ring 1, Hormone-replacementTherapy, Antihypertensive agents | 8.7(Range:7-10) days | Headache (in all cases), VisualDisturbances, Drowsiness, AbdominalPain, Hemiparesis | CVST in: Cortical veins, Transverse sinus,Sigmoidsinus,Inferior sagittal sinus,vein of Galen and Straightsinusall with ICH | Platelet count: Mean: 31.2(Range:19-70) cells×109/litPF4 IgG Assay:Positive in all casesd-Dimer : Positive in all cases  | Alive :3 patientsFatal: 1 Patient |
| 15 | Scully M. et al.[[24](#_ENREF_24)]  | AstraZeneca(ChAdOx1 nCoV-19) | 11 FMean age : 39.3(Range:26-55)5 MMean age : 32(Range:21-48) | N/A | 11.7(Range:6-19) days | N/A | 13 CVST (In 2 cases with ICH and 1 with SAH)2 MCA infarct1 ICHAdditional findings in addition to CVST: ICHSAHPVT(portal vein thrombosis)PE(pulmonary embolism),Ischemic bowel infarct, AAT(acute aortic thrombosis)IJVT(internal jugular vein thrombosis)Thrombosis in the lung | Platelet count: Mean: 48(Range:7-113) cells×109/litPF4 IgG Assay:Done in 10 cases, 9 Positive and 1 Negatived-Dimer : Positive in 13 cases and 3 cases not done.  | Alive:11 patientsFatal: 5 Patients  |
| 16 | Suresh P,et al[[33](#_ENREF_33)] | AstraZeneca(ChAdOx1 nCoV-19)  | 27y/o M | - | 2 days | Headaches, Eye floatersand Vomiting | Cerebral venous sinus thrombosis (CVST)Parenchymal haemorrhage | Platelet count: 90 cells×109/litPF4 IgG Assay:Positived-Dimer : Positive | Fatal |
| 17 | Tobaiqy M et al.[[25](#_ENREF_25)]  | AstraZeneca(ChAdOx1 nCoV-19) | 1F Age between :18–64 | N/A | N/A | N/A | CVST,With ICH And Pulmonary embolismPeripheral artery thrombosis | N/A | Not Resolved |
| 18 | Tølbøll Sørensen AL et al.[[34](#_ENREF_34)] | AstraZeneca(ChAdOx1 nCoV-19) | 30 y/o F | MigraineOral contraceptive pill (OCP)Prothrombin mutation | 10 days | Persistent Headacheand General malaise | CVST | Platelet count: 51cells×109/literd-Dimer : PositivePF4 IgG Assay: Positive | Alive |
| 19 | Walter U, et al.[[35](#_ENREF_35)] | AstraZeneca(ChAdOx1 nCoV-19) | 31 y/o M | - | 8 days | Acute headache, Aphasia, and Hemiparesis | Carotid arterial thrombosis Middle cerebral artery occlusion | Platelet count: NLd-Dimer : PositivePF4 IgG Assay:Positive | Alive |
| 20 | Wolf ME, et al.[[26](#_ENREF_26)] | AstraZeneca(ChAdOx1 nCoV-19) | 3F34.6 y/o(Range : 22-46) | - | 6.3 days(4-8) | Headache in all cases Epileptic seizureAphasia andHemianopia | CVSTIn Ascending cerebral veins,Superior sagittal sinus, Transverse sinus, and also Sigmoid sinuswith ICH and SAH | Platelet count: 75.5cells×109/liter (Range 60-92)PF4 IgG Assay: Positive d-Dimer : Positive  | All Alive |
| 21 | Clark, R. et al.[[29](#_ENREF_29)] | Ad26.COV2.S (Johnson & Johnson/ Jansen) | 40 y/o F | - | 12 days | headache, photophobia, and intermittentdizziness | Cerebral venous sinusthrombosis (CVST) involving the left transverse andSigmoid sinuses, extending into the left internal jugular vein | Platelet count: 20cells×109/litd-Dimer : PositivePF4 IgG Assay:Positive  | Alive |
| 22 | Muir KL et al.[[23](#_ENREF_23)]  | Johnson and Johnson | 48 y/o F | - | 14 days | Malaise and Abdominal painand thenHeadache | CVST in the right transverseAnd Straight sinuses.AndSplanchnic -vein thrombosis | Platelet count: Mean: 13cells×109/litPF4 IgG Assay:Positived-Dimer : Positive | Critically ill |
| 23 | See I et al.[[16](#_ENREF_16)]  | Johnson & Johnson | 12 F8 (18-39)4(>40) | Obesity in 6 patientsCombined oral contraceptives (OCP)in 1 patient | 8.8 days (Range: 6-13) | Headache 11 patientsOther symptoms: Back pain,Abdominal pain, lethargy, Myalgia, nausea, Vomiting, fever, Dyspnea, Chills, Photophobia, Cognitive impairment, Blurred vision, Right side weakness  | 12 CVST in: Transverse sinus, Sigmoid sinus,Straight sinus,Superior sagittal sinus,Internal jugular veinwith 7 patients ICH and and 8 patients with non-CVST including Thromboses including:Portal vein thrombosislower extremity deep vein thrombosis | Platelet count: Mean: 45.7(Range:9-127) cells×109/litPF4 IgG Assay:Done in 11 cases, all Positive d-Dimer : Positive in all patients  | 4 patients were discharged to home.Fatal 3 patients Other :Intensive care unit (ICU) care : 3 Non-ICU hospitalization: 2 |
|  | Total | AstraZeneca(ChAdOx1 nCoV-19) | 51In 42 patients, sex was reported (28 F, 14M) | 2 Patients on OCP | 9.1 daysRange : (4-19) | Headaches (most frequent complain ) | CVST:45MCA infarct: 4ICH:4(CVST+ICH/SAH: 19)  | Platelet count: 50cells×109/lit(5-113)PF4 IgG Assay:Positive: 35Negative: 3Unknown:11d-Dimer :Positive: 43Unknown:5 | Alive:24Fatal:25Unknown:2 |
|  | Total | Ad26.COV2.S (Johnson & Johnson/ Jansen) | 15 F | 6 Patients with ObesityOne on OCP | 10.4(Range: 6-14) | Headache most frequent presenting complain  | 15 CVSTCVST+ICH/SAH: 10) | Platelet count: Mean: 43cells×109/lit(Range:9-127)PF4 IgG Assay:Positive in 12 casesUnknown in 2 casesd-Dimer : 15Positive in all cases | Discharged: 5Fatal: 4Critically ill:4Non-ICU hospitalization:2 |
| F: Female, M: Male, N/A: not applicable, CVST: cerebral venous sinus thrombosis, MCA: Middle cerebral artery, ICH: Intracerebral Hemorrhage, SAH: Subarachnoid hemorrhage, PF4: Platelet Factor4 |