CLINICAL SPECTRUM OF POST PARTUM DURAL SINUS THROMBOSIS AN EXPERIENCE IN TERTIARY CARE HOSPITAL, KHYBER PAKHTUNKHWA

Ziauddin[1], Inayat Ullah[1], Muhammad Kashif[1], Zainab Zaib[2], Shahabuddin Zia[3]

ABSTRACT

Introduction: Post partum dural sinus thrombosis (DST) is a life threatening condition and is characterized by a wide range of nonspecific clinical presentations, course and outcome. The main aim of this study was to determine the clinical spectra of post partum DST.

Materials and Methods: A total of 35 patients with radiologically confirmed diagnosis of post partum DST admitted in Medical wards and Obstetrics and Gynecology units of Lady Reading Hospital, Peshawar were included in the study between June 2016 to Dec 2017. All the relevant information including detail history, clinical examination and laboratory investigations were recorded in a pre-designed proforma. Data was analyzed by SPSS version 22.

Results: Mean age was 26±2 years. DST was more commonly observed in primi-gravida (37.14%). Headache and fever being the most common presenting symptoms(71.4% and 62.9% respectively), followed by visual symptoms (45.7%), focal weakness (28.5%) and seizures (20.0%). Most commonly involved sinuses were transverse sinus (47.2%) and superior sagittal sinus (28.5%).

Conclusion: Post partum cerebral sinus thrombosis is a serious condition which needs early diagnosis and prompt initiation of treatment to prevent complications and mortality.

Key words: Dural sinus thrombosis, postpartum,

INTRODUCTION

Dural sinus thrombosis (DST) is an uncommon form of venous thrombo-embolism.[1] It is characterized by the presence of blood clot in dural or cortical veins of brain. DST is disease of younger population with an incidence of 3-4 cases per million according to studies in Canada, USA and Brazil.[2,3,4]The incidence of DST in Pakistan is 10-15% annually.[5] In Iran, its prevalence is estimated to be 12.1 per million people.[6] Dural Sinus Thrombosis accounts for 0.5-3.0% of all types of stroke.[7] DST is predominant in women(75%) as compared to males with a ratio of 3:1.[2,8,9] A random survey of tertiary care hospital of KPK concluded that almost 60% of patient suffering from DST were in the 3rd to 4th decade of life and 54% were women in child bearing age.[10,11]

DST has multi factorial etiology. It may be associated with congenital and acquired risk factors. In developed countries, congenital thrombophilia is the most frequently associated risk factor[7]. Acquired risk factors include malignancy, central nervous infections, head trauma, systemic vasculitis, pregnancy and perpeurium[1,12,13]. In developing countries like Pakistan, India, Sri Lanka and Iran, pregnancy and purpeurium are the most dominant prothrombotic conditions leading to DST[14]. In our country, post partum DST is more common. The exact pathogenesis is unclear but it seems that hyper coagulable state is the key feature in development of DST during pregnancy and puerpeurium.

During pregnancy, specially in 3rd trimester different changes occur in coagulation system such as increase platelet adhesion and enhanced coagulation factors which lead to hypercoaguable state resulting in the developing of DST[15]. In our community, bad obstetrical practice by unqualified people results in blood loss and local trauma during delivery. Also immobility and prolonged bed rest during puerpeurium results in venous stasis which along with dehydration further aggravate the prothrombotic state. All this leads to thrombosis.[16,17]

There is scarcity of information and studies regarding post partum DST in Pakistan. We have attempted to find the different manifestations of DST in puerperium at a tertiary care hospital of KPK.

MATERIALS AND METHODS

This retrospective descriptive study was conducted at Lady reading Hospital, Peshawar from June 2016 to Dec 2017. Total of 35 post partum ladies with

[1] Department of Medicine, Medical Teaching Institute, Lady Reading Hospital, Peshawar
[2] Department of Gynecology and Obstetrics, Medical Teaching Institute, Lady Reading Hospital, Peshawar
[3] Beaconhouse School System, Peshawar

Address for correspondence:
Dr. Inayat Ullah
Department of Medicine, Medical Teaching Institute, Lady Reading Hospital, Peshawar
E-mail: drababat78@yahoo.com
Cell: 03005963571

DST who were admitted in Medical and Obstetrics and Gynecology units of the hospital were enrolled. DST was confirmed by neuroimaging (MRI Brain and MR Venography). Detailed history, clinical examination and baseline investigations were carried out in all our subjects. Fundoscopy and CSF analysis was performed in all patients. All the necessary information was collected on a predesigned proforma meeting the objectives of the study. Informed consent was taken from all participants. Our study was approved by the hospital committee. Findings were analyzed by SPSS software version 22.

RESULTS

Clinical manifestations of the 35 confirmed post partum DST cases were studied. The age of the patients was in the range of 15-40 years. Majority of the patients were in the age group 21-30 years (71.4%) with mean age of 26±2 years. Most of our patients had low socioeconomic status (44.4%) and were illiterate. Among the enrolled 35 patients, 14 patients (40%) belonged to Peshawar while the remaining were referred from rural areas.

As far as the obstetrical history is concerned, post partum DST was predominantly seen in primi-gravidas (37.14%). 11 patients (30.6%) had home delivery by local Dais and Lady Health Visitors while 14(38.9%) had hospital instrumental delivery and %). 10 patients (27.8%) had Caesarean Section at district hospital or tertiary care hospital.

In 03 patients (8.3%) there was past medical history of DST. Detailed enquiry revealed non-compliance with previous medications.

Fever and headache were the most common presenting complaints followed by seizures, visual disturbances and focal neurological deficits as delineated in Table 1.

Neuroimaging revealed hemorrhagic infarcts in 25 cases (69.4%). While non-hemorrhagic infarct was seen in 10 cases(27.8%).

Transverse sinus was the most common sinus involved by thrombosis among studied patients (47.2%). This was followed by superior sagittal, sigmoid and cavernous sinus (28.5%, 20.0% and 2.8% respectively) as shown in Table 02.

Table 1: Common Neurologic Findings among Patients with Cerebral Venous Sinus Thrombosis

Sr. no	Symptoms	Number of Patients(n)	Percentage (%)
1.	Headache	25	71.4
2.	Fever	22	62.9
3.	Visual symptoms	16	45.7
4.	Focal weakness	10	28.5
5.	Vomiting	09	25.7
6.	Seizures	07	20.0
7.	Vertigo	04	11.4

Table 2: Common Cerebral Sinuses Involved by Thrombosis

Sr. no	Cerebral Sinus	Number(n)	Percentage(%)
1.	Transverse sinus	17	47.2
2.	Superior sagittal sinus	10	28.5
3.	Sigmoid sinus	07	20.0
4.	Cavernous sinus	01	2.80

DISCUSSION

DST is a life threatening entity that needs prompt diagnosis and treatment. In developing countries purpeurium and infectious diseases are most common etiological factor as compared to the western population.[18] Post partum DST is attributed to hypercoaguable state of pregnancy.[20] In our country, there is local custom of immobility and prolonged bed rest, high protein and fat diet and low water intake following delivery. This could further aggravate the hyper viscosity.

Most of the patients in our study were in age range of 21-30years. This is in accordance with an Indian study conducted by Narayan and his colleagues in Hyderabad between 2002 and 2010 demonstrating mean age of 26±2 years at the time of presentation.[11] Similarly in an Iranian study of 1122 patients , similar age groups has been revealed.[5]

Majority of our study patients were illiterate and belonged to low socio-economic status. Withholding fluid intake especially in hot summer season and poor hygienic health exercises play an important role in the development of DST. Restricting water in the post partum period is a common tradition in our society. There are certain spiritual faiths and superstitions behind this kind of act. For example, some people have trust that less water intake by mother during purpeurium results in more strengthening of the breast milk for the baby. Others linked this to less bleeding during labor and delivery. Aaron et, al also demonstrated dehydration as a result of less water intake in the post partum period in the causation of post partum DST.[19]

In our study, DST was more encountered in multiparous women. Most of these women with multi-

ple pregnancies had bad obstetrical history including spontaneous abortion and still birth. Kupferminc and his colleagues in their research on genetic thrombophilia screen pointed out that concealed thrombosis was present in 71% of patients who had suffered from different kinds obstetrical complications.[20] There is also link of thrombophilic gene polymorphism in women with unexplained late fetal loss. Martinelli also disclosed the same in his study.[21]

In our study, 27.8% deliveries were by Caesarian Section. Caesarian delivery is an unconventional risk factor for DST.[22]Following any surgery, Protein C level can decrease[23]. Also there is a pregnancy associated resistance to activated protein C.[24,25]

DST is a multi causative condition characterized by temperamental clinical presentations. Patient age, location and extension of thrombosis and the cost of underlying disease play an important role in such inconsistencies.[26] In our study the most frequent symptom were headache (71.4%) and fever (62.9%). Diffuse, isolated and bilateral headache was reported. Saposnek and his colleagues has shown 90% frequency of headache in their study[27]. The mechanism of headache is local inflammation, venous wall distention and blood leakage over the brain surface, irritating the dural sensitive fibres.[28]

Seizures were seen in 07 of our confirmed DST patients (20.0%). Both focal and generalized tonic clonic fits were observed. Kalita and Inacio have figured out that 44.3% of patients may have seizures in early stages of disease.[29]

Focal neurological deficits were observed in 10 patients (28.5 percent) in our study. This sequelae is comparable to those reported in previous studies.[30,31] Guenther and Arauz described that focal sensory and motor deficits are very common in DST and may be suggestive of location site, especially when associated with cranial nerve palsies.[32]

As far as the location of the thrombus is concerned, we found in our patients that transverse sinus was more commonly involved followed by superior sagittal sinus (47.2%, 28.57% respectively). The International Study on Cerebral Vein and Dural Sinus Thrombosis (ISCVT) determined the frequency of the sites of cerebral venous thrombosis which is in agreement with our study. It discloses that the involvement of Transverse Sinus is eighty six percent (86%), Superior Sagittal Sinus is sixty two percent (62%) and that of straight Sinus is eighteen percent (18%).[33]

CONCLUSION

It is concluded from our study that post partum DST is a potentially fatal disease which is sometimes misdiagnosed resulting in catastrophe. Public awareness, training of health care providers and revision of health policies is the need of the day.

REFERENCES

1. Bousser MG, Crassard I. Cerebral venous thrombosis, pregnancy and oral contraceptives. Thromb Res.2012;130(Suppl):S19-22
2. Murthy KK, Cheffitz DL; J Clin; Cerebral venous sinus thrombosis: a case report with review of diagnosis and treatment strategies ; Case Rep 4: 354, vol 4 issue 4, 2014.
3. Ruiz-Sandoval JL, Chiquete E, Bañuelos-Becerra LJ, Torres-Anguiano C, González-Padilla C, Arauz A, et al. Cerebralvenous thrombosis in a Mexican multicenter registry of acute cerebrovascular disease: The RENAMEVASC study. J Stroke Cerebrovasc Dis 2012;21:395-400.
4. Stam J. Thrombosis of the cerebral veins and sinuses. N Engl J Med 2005;352:1791-8.
5. Janghorbani M, Zare M, Saadatnia M, Mousavi SA, Mojarrad m, Asgari E. Cerebral vein and dural sinus thrombosis in adults in Isfahan, Iran; frequency and seasonal variation. Acta Neurol Scand. 2008;117(2):117-1121
6. Farzadfard MT, Foroughipour M, Yazdani S, Ghabeli-Juibary A, Rezaeitalab F. Cerebral Venous-Sinus Thrombosis: Risk Factors, Clinical Report, and Outcome. A Prospective Study in the North East of Iran. Caspian J Neurol Sci. 2015;1(3):27-32.
7. Bousser MG, Ferro JM. Cerebral venous thrombosis: An update. Lancet Neurol 2007;6:162-70.
8. Umesh G Rajoor et B N Seema; Cerebral Venous Thrombosis in Women: A Study from Teaching Hospital in North Karnataka;; International Journal of Scientific Study; volume 3; August 2015
9. Degirmenci Y, Kececi H, Seker IS;Cerebral sinus venous thrombosis in puerperium: Review of the literature in the light of two cases; Y. Cumhuriyet Medical Journal, Volume: 37, Number 1,March 2015
10. Khealani BA, Wasay M, Saadah M, et al. Cerebral Venous Thrombosis: a Descriptive Multicenter study of Patients in Pakistan and Middle East. Stroke. 2008; 39(10):2707-2711.
11. Narayan D, Kaul S, Ravishankar K,et al. Risk factor, clinical profile, and long term outcome of 428 patients of cerebral sinus thrombosis; Insights from Nizam's Institute venous Stroke Registry, Hyderabad (India). Neurol Sci. 2012;60(2);11-16
12. Guenther G, Arauz A. cerebral venous thrombosis: A diagnostic and treatment update. Neuralgia 2011;26:488-98.
13. Dlamini n, Billinghurst L, Kirkham FJ. Cerebral venous sinus (sinovenous) thrombosis in children. Neurosurg Clin N Am 2010;21:11-27.
14. Srinivasan K. cerebral venous and arterial thrombosis in pregnancy and puerperium; a study of 135 patients. Angiology. 1984;34:731-46.
15. Alvis JS, Hicks RJ. Pregnancy induced acute neurologic emergencies and neurologic conditions

encountered in pregnancy. Semin ultrasound CT MR 2012;33:46-54.

16. Gao H, Yang BJ, Jin LP, Jia XF. Predisposing factors, diagnosis, treatment and prognosis of cerebral venous thrombosis during pregnancy and postpartum: A case-control study. Chin Med J (Engl)2011;124:4198-204.

17. Munira Y, Sakinah Z, Zunaira E. Cerebral venous sinus thrombosis presenting with diplopia in pregnancy: A case report, J Med Case Rep 2012;6:336.

18. National Institutes of health consensus development conference. Prevention of venous thrombosis and pulmonary embolism. JAMA. 1986;256:744-9.

19. Aaron S, Alexander M, Maya T, Mathew V, Goel M, Nair SC, Mammen J, Vikram M. Underlying prothrombotic states in pregnancy associated cerebral venous thrombosis. Neurol India. 2010;58:555-9.

20. Kupferminc MJ, Eldor a, Steinman N, Many A, Bar-Am, Jaffa A, et. al , increased frequency of genetic thrombophilia in women with complications of pregnancy. NEJM 1999;340:9-13.

21. Martenelli I, Taidi E, Cetin I, Marinoni A, Gerosa S, Villa MV, et. al. Mutations in coagulation factors in women with unexplained late fetal loss. NEJM 2000;343:1015-8.

22. Lanska DJ, Keryseio RJ. Risk factors for puerperium and postpartum strke and intracranial venous sinus thrombosis. Stroke 2000; 31:1274-82.

23. Griffin JH, Mosher DF, Zimmerman T, Kleiiss Aj. Protein C and anti thrombin protein is reduced in hospitalized patients with intravascular coagulation. Blood 1982; 60:261-9.

24. Cumming AM, Tait RC, Fildes S, Yoong A, Keeney S, Hay CR,. Development of resistance to activated protein C during pregnancy. Br J Haematol 1995;90: 725-7.

25. Hellegren m, Svensson PJ, Dahlbock B. resistance to activated pretien c as a basis for venous thrombo-embolism associated with pregnancy and oral contraceptives. Am J Obstet Gynaecol 1995;173:210-3.

26. Rangel Guerra R. Avances recientes en el diagnóstico y tratamiento de la trombosis venosa cerebral. Medicina Universitaria 2002;4:15-27.

27. Saposnik G, Barinagarrementeria F, Brown RD, Bushnell CD, Cucchiara B, Cushman M, et al. Diagnosis and management of cerebral venous thrombosis: A statement for healthcare professionals from the American Heart Association/American Stroke Association. Stroke 2011;42:1158-92

28. Timóteo Â, Inácio N, Machado S, Pinto AA, Parreira E. Headache as the sole presentation of cerebral venous thrombosis:A prospective study. J Headache Pain 2012;13:487-90.

29. Kalita J, Chandra S, Misra UK. Significance of seizure in cerebral venous sinus thrombosis. Seizure 2012;21:639-42

30. Preter M, Tzourio C, Ameri A, Bousser MG. Long-Term Prognosis in Cerebral Venous Thrombosis: Follow-Up of 77 Patients. Stroke 1996; 27(2):243-6.

31. Ashjazadeh N, Borhani-Haghighi A, Poursadeghfard M, Azin H. Cerebral Venous-Sinus Thrombosis: A Case Series Analysis. Iran J Med Sci 2011; 36(3): 178-82.

32. Guenther G, Arauz A. Cerebral venous thrombosis: A diagnostic and treatment update. Neurologia 2011;26:488-98.

33. Ferro JM, Canhão P, Stam J, Bousser MG, Barinagarrementeria F. Prognosis of cerebral vein and dural sinus thrombosis: Results of the International Study on Cerebral Vein and Dural Sinus Thrombosis (ISCVT). Stroke 2004;35:664-70.